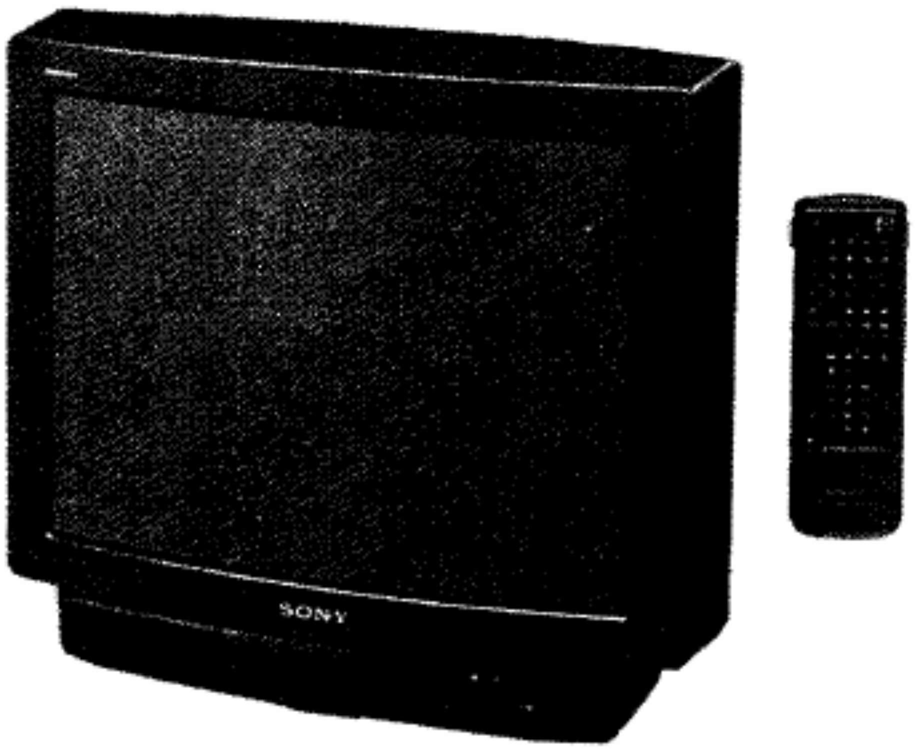
KV-M2530K/M2531K

RM-816

SERVICE MANUAL

OIRT Model
KV-M2530K
Chassis No. SCC-E38M-A
KV-M2531K
Chassis No. SCC-F38N-A



AE-1C CHASSIS

MODELS OF THE SAME SERIES	
KV-M2530K/M2531K	KV-C2961K
KV-M2520K/M2521K	KV-X2151K
KV-C2561K	KV-X2551K/X2951K

SPECIFICATIONS

Television system	B/G/H, D/K
Color system	PAL/SECAM/NTSC VIDEO IN
Channel coverage	B/G VHF : E2-E12 UHF : E21-E69 D/K VHF : R1-R12 UHF : R21-R60 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10 U1-U10
Picture tube	Hi-Black Trinitron tube Approx. 65 cm (Approx. 59 cm picture measured diagonally) 110°-degree deflection
Inputs	⊝- 1 21-pin connector: CENELEC standard including RGB input. Front: ⊝ 3 ⊝ Video input phono jack ⊝ Audio input phono jack ⊝ S Video input 4pin DIN Y: 1Vp-p±3dB 75ohm C: 0. 3Vp-p±3dB 75ohm
Outputs	21-pin connector: CENELEC standard Earphones jack: minijack

Sound output	10W (Music)
Power consumption	86Wh [KV-M2530K] 89Wh [KV-M2531K]
Dimensions	Approx. 577 x 523 x 491mm (w/h/d)
Weight	Approx. 34kg
Supplied accessories	RM-816 Remote Commander (1) IEC designation R6 batteries (2)

[RM-816]

Remote control system	infrared control
Power requirements	3V dc 2 batteries IEC designation R6 (size AA)
Dimensions	Approx. 75 x 221 x 23mm (w/h/d)
Weight	Approx. 230g (including batteries)
Accessories supplied	IEC designation R6 Commander

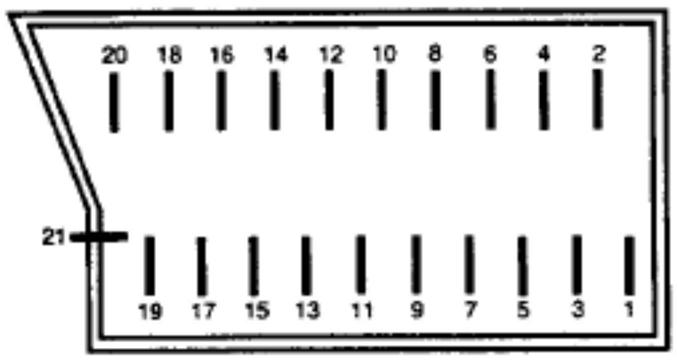
Design and specifications are subject to change without notice.

MICROFILM

TRINITRON® COLOR TV

SONY®

21 - pin Euro Connector Configuration



PIN	SIGNAL	SPECIFICATION
1	Audio output	0.5Vrms/1kilohm or less
2	Audio input	0.5Vrms/10kilohm or more
3	Audio output	0.5Vrms/1kilohm or less
4	Earth (audio)	
5	Earth (B - input)	
6	Audio input	0.5Vrms/10kilohms or more
7	B - input	0.7Vp-p/75ohms
8	Function switching	9.5V to 12V
9	Earth (G - input)	
10		
11	G - input	0.7Vp-p/75ohms
12		
13	Earth (R - input)	
14	Earth (blanking)	
15	R - input	0.7Vp-p/75ohms
16	Fast blanking	1V to 3V / 75ohms
17	Earth (video)	
18	Earth (fast blanking)	
19	Video output	1Vp-p / 75ohms
20	Video input	1Vp-p / 75ohms
21	Screening plug	

4 pin connector [Ⓢ]

Pin No	Signal	Signal level
1	Ground	
2	Ground	
3	Y (S signal) input	1V ± 3db 75ohm, positive Sync 0.3V
4	C (S signal) input	0.3V ± 3db 75ohm positive

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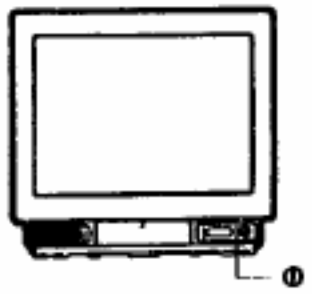
SAFETY RELATED COMPONENT WARNING !!

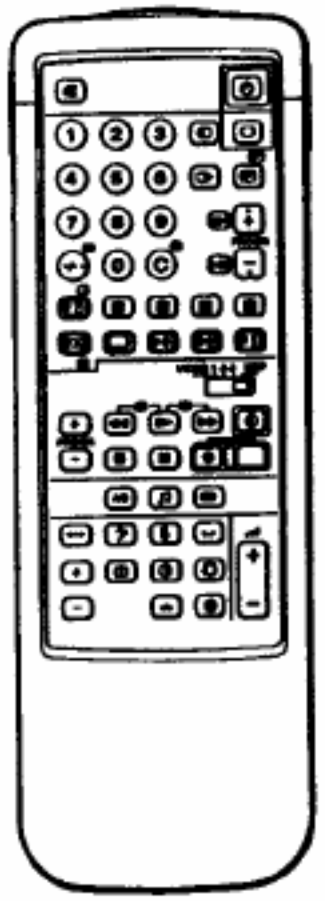
COMPONENTS IDENTIFIED BY SHADING AND MARKED WITH ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

1-1. SWITCHING ON/OFF

After you have completed the basic preparation, your TV is ready to be connected to the mains power supply (220/240V AC, 50Hz).





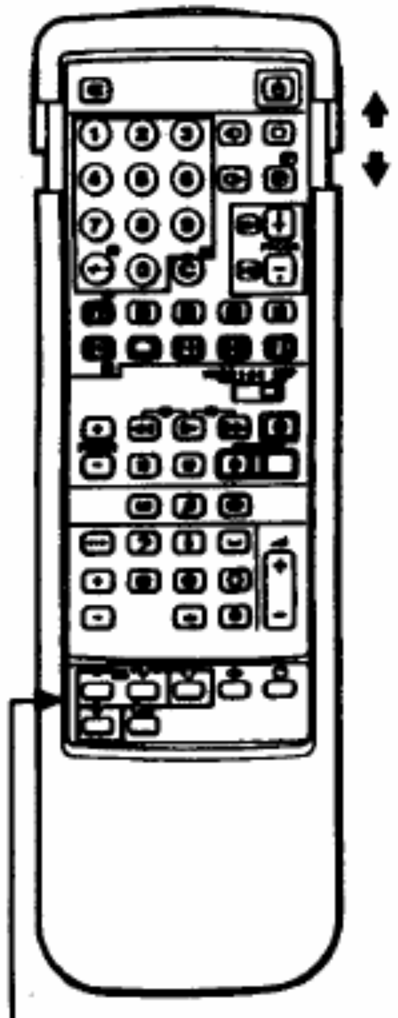
How to turn the TV on

Action	Result
Press ⏻ on the TV.	The TV will turn on. **Note:** If the screen remains blank, the TV may be in the standby mode. Press ▭ on the commander to switch it on.

How to turn the TV off

A Temporarily	
Press ⏻ to enter standby mode.	The TV will be in standby. To return to the TV mode press ▭
B Completely	
Press ⏻ on the TV.	The TV will turn off.

1-2. PRESETTING



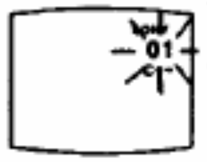
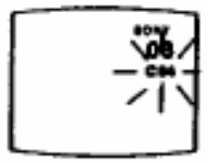
Note: These buttons should be used in preset mode only.

Before viewing the TV programmes you need to preset TV channels. There are 60 spaces available for storing these channels.

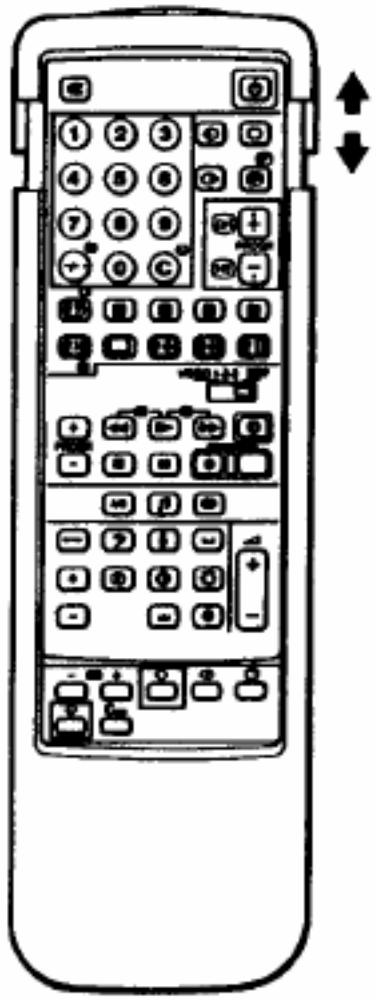
TV stations broadcast their channels at certain frequencies. You must preset these channels to programme numbers on the TV. If you are unfamiliar with the channel numbers of the stations you wish to preset, use "How to Preset Channels Automatically". If you are familiar with the channel numbers refer to "How to Preset TV Channels Directly".

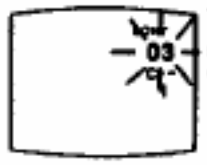
Slide open the full function side of the Remote Commander to reveal preset buttons.

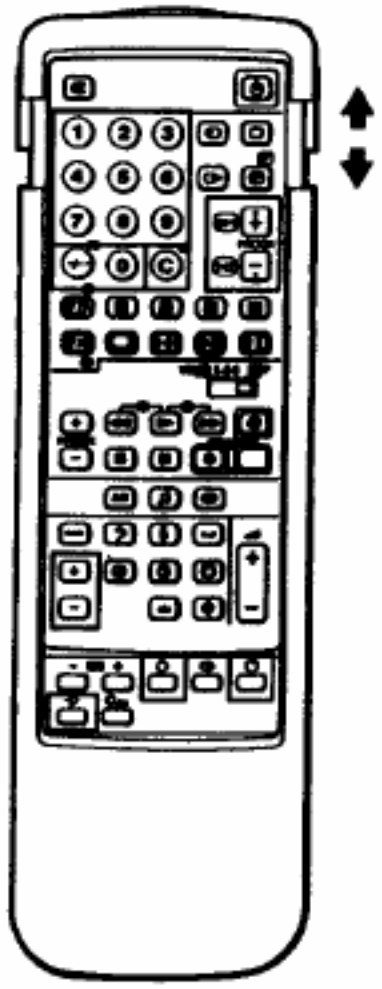
How to preset channels automatically

Action	Result
1 Press ⊕ to enter the preset mode.	 The programme number will start flashing.
2 Press PROGR +/- or the number buttons to select the programme number to which you want to preset a channel. **Note** To select a double-digit number, use the -/-- button. For example, if you want to choose 23, press -/--, 2, and then 3.	The programme number changes
3 Press ⊞ + or – once to search forward or backward for channels.	 When a channel is tuned in, the search will stop and the channel number will be displayed. **Note** If you want to skip a channel, press ⊞ + or – again to restart the search.
4 Press ◇ if you want to store the channel which is tuned in. Press ⊕ to exit preset mode without storing.	The channel is now stored and you have returned to TV mode.
5 Repeat steps 1 to 4 to store the other channels.	

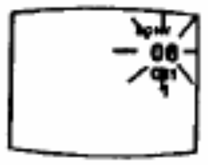
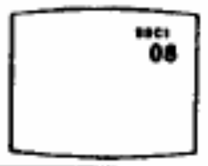
How to preset TV channels directly



Action	Result
1 Press ⇨ to enter the preset mode.	 The programme number will start flashing.
2 Press PROGR +/– or the number buttons to select the programme number on which you want to preset a channel. ①②③ + PROGR – ④⑤⑥ ⑦⑧⑨ -/-- ⓪ **Note** To select a double-digit number, use the -/-- button. For example, if you want to choose 23, press -/--, 2, and then 3.	The programme number changes.
3 Press C. Ⓒ	The indication "C--" starts flashing on the display.
4 Select the channel number with two digits (e.g. 04) by pressing the number buttons. ①②③ ④⑤⑥ ⑦⑧⑨ ⓪ **Note** Press the second number within 5 seconds after the first one, otherwise the operation will be cancelled.	The channel number changes to select the new channel. **Note** If you have made a mistake the letter "X" will appear. Repeat step 2 again.
5 Press ◇ to store the channel which is tuned in. Press ⇨ to exit the preset mode without storing.	The channel is now stored and you have returned to TV mode.
6 Repeat steps 1 to 5 to store the other channels.	



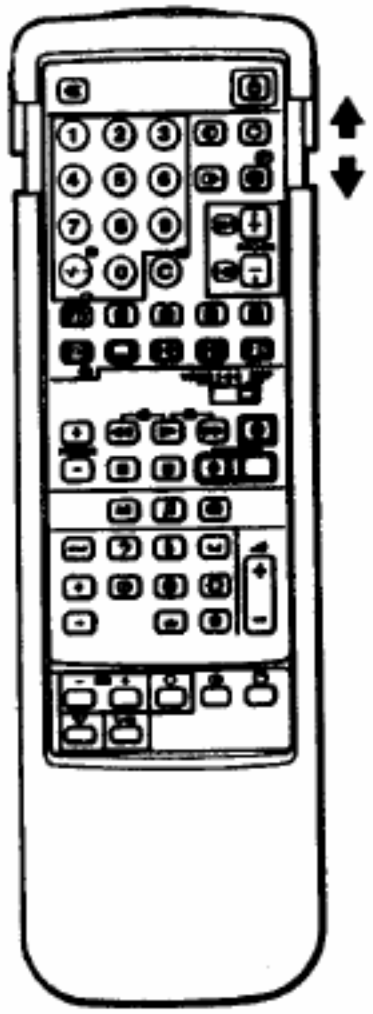
You can use up to five characters to "name" a channel or station (e.g. BBC1).

Action	Result
1 Select a programme number you want to name by pressing the PROGR +/– or the number buttons ①②③ + PROGR – ④⑤⑥ ⑦⑧⑨ -/-- ⓪	The selected programme number will appear.
2 Press ⇨.	 The programme number starts flashing.
3 Press ▢.	The first column of the station name indication will start flashing.
4 Press + or – repeatedly to select a letter in the alphabet, a number, or a blank space. ⊞ ⊟	The letters of the alphabet, numbers and space ("–") will appear sequentially.
5 Press ▢.	The first character is now set and the second column will start flashing.
6 Repeat steps 4 and 5 to set each letter or number.	
7 Press ◇.	 The channel name is now stored and you have returned to TV mode.

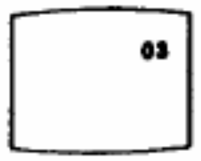
How to tune in a channel temporarily

You can tune a channel in temporarily, if it has not been preset.

Action	Result
1 Press C. For cable channels, press C twice.	The indication "C" appears on the screen.
2 Select the channel number with two digits by pressing the number buttons (e.g. for channel 4, first press 0, then 4.)	The channel is received, but it is not stored to any programme number.



Using the PROGR +/– buttons you can skip unused programme channel numbers. However, the skipped numbers may still be called up using the number buttons.

Action	Result
1 Press ⟐ to enter the preset mode.	The programme number will start flashing.
2 Select the programme number that you want to skip by pressing PROGR +/– or the number buttons.	The programme number changes.
3 Press Coo.	The lowest channel number appears under the programme number.
4 Press ◇.	 The channel is now stored and you have returned to TV mode.
5 Repeat steps 1 to 4 to skip other programme numbers.	

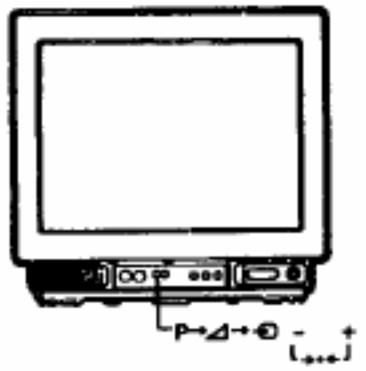
How to Fine Tune Manually

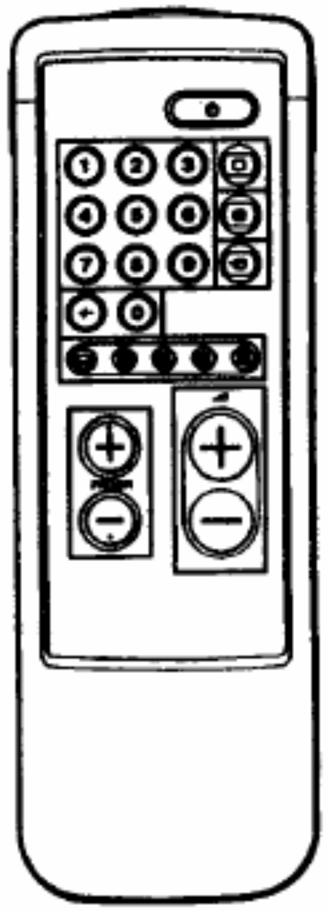
If the picture is distorted, you can fine tune the channel manually.

Action	Result
Press ▦ +/– repeatedly until the picture looks normal.	The indication ← F → appears on the screen.
Press ⟐ to enter the preset mode.	The programme number starts flashing.
Press ◇.	The fine tuning is stored.

1-3. BASIC TV OPERATION

Note: Press ⊥ on door to open.

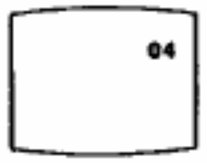




This section introduces you to the basic control functions which are available on the simple side of the remote commander.

How to Select Programmes

Before you can select programmes make sure that you have preset channels, (refer to pages 5 and 6).

Action	Result
Press PROGR +/– or the number buttons. To select a double-digit number, use the -/-- button. For example, if you want to choose 23, press -/--, 2, and then 3.	 The selected programme is displayed.

How to Adjust the Volume

Action	Result
Press ◿ +/–.	The volume markers will appear and are adjusted accordingly.

How to Use Additional Functions

How to operate with the buttons on the TV

You can also select programmes and adjust the volume using the P→◿→⊕ and →•← +/– buttons on the front of the TV.
For operation, first press the P→◿→⊕ button repeatedly so that the P (for programme) or ◿ (for volume) indication appears on the screen, and then adjust with the →•← +/– buttons.

Note: To restore factory set level press →•← +/– together.

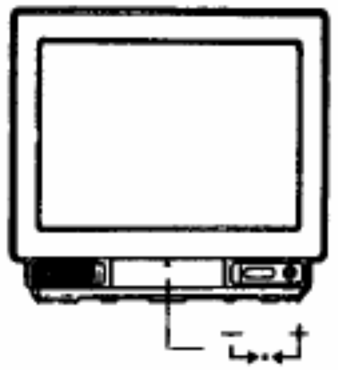
Basic teletext operation

Select:
The ⊜ button to view teletext.
The ▢ button to request subtitles (p.888).
The ▢ button to return to TV mode.
For details about teletext operation, refer to page 12.

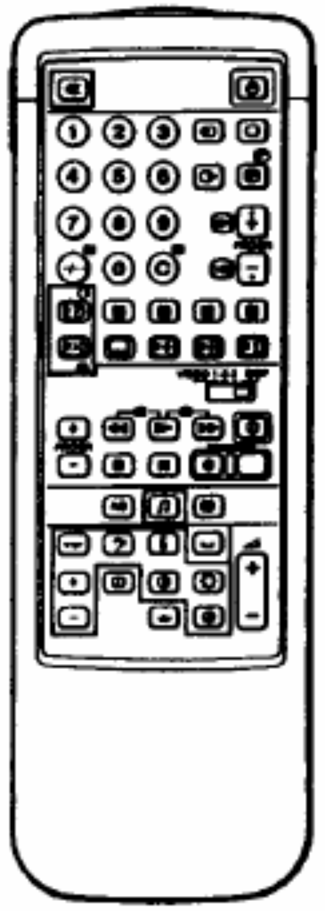
How to view the video input picture

Press ⊕. To return to the TV mode, press ▢. For further details, refer to page 15.

1-4. ADVANCED TV OPERATION



This section shows you how to use convenient features, to adjust the picture and sound to your taste, enter a name for a channel to be displayed on the screen, and fine tune a channel.
Use the full-function side of the Remote Commander.



How to use on-screen display and special sound features

You can enjoy the following convenient features.

How to	Action	To resume normal picture/sound
Display on-screen indications	Press ⊡.	Indications disappear after 5 seconds.
Display programme number	Press ⊡ twice.	Press ⊡ twice again
Mute the sound	Press ◀.	Press ◀ again.
Set the sound to music listening position	Press ♫.	Press ♫ again.
Request the time	Press ⊙.	Press ⊙ again.

How to adjust the picture and sound

Although the picture and sound have been adjusted at the factory, you might want to adjust them to your own taste. To do this, please follow the steps.

To Adjust:	Press:	Then:	Result: (– ⟷ +)
Picture:			
Colour Intensity	◕	⊕ ⊖	Less ⟷ More
Picture Contrast	◑		Less ⟷ More
Brightness	☼		Dark ⟷ Bright
Sound:			
Bass	𝄢	⊕ ⊖	Less ⟷ More
Treble	𝄞		Less ⟷ More

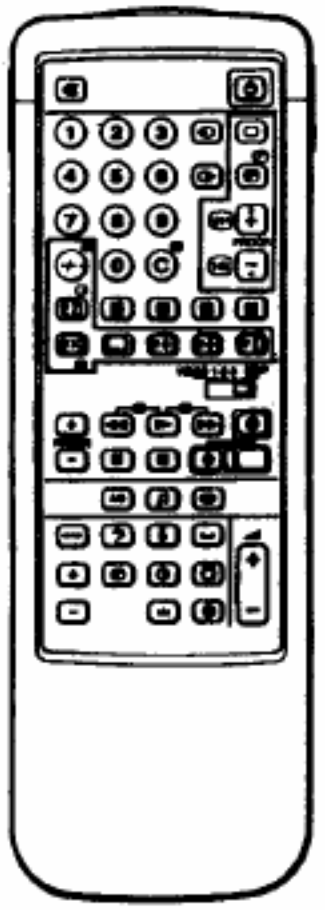
To reset the picture and sound to factory set levels press →•←.

On the set:
Press →•← +/- buttons simultaneously.

Note:
Some of the functions on the remote commander are not available for use with this TV set.

1-5. TELETEXT OPERATION

TV stations broadcast teletext programmes via the TV channels. To use the full teletext features, use the buttons indicated in green on the full function side of the Remote Commander.



How to View the Teletext

Action	Result
1 Select the channel which carries the teletext service you wish to see.	The channel changes on the screen.
2 Press ⊜.	If the teletext signal is not broadcast, then p100 is displayed.
3 Input three digits for the page number using the number buttons. **Note** If you make a mistake, type in any three digits, then re-enter the correct page number.	The numbers are entered on the screen. The requested page will appear in a few seconds.
To return to the TV mode. Press ▭. **To change the teletext channels** First press ▭ to return to the TV mode, then repeat steps 1 to 3.	

Note
If the signal of the TV channel is weak, teletext errors may often occur.

How to Use the Advanced Features of Teletext

How to	Action	Result (On-screen display)
Request the index page.	Press ⊡ (INDEX).	The index page appears.
Request the subtitle page (p888).	Press ▭.	The subtitle page is displayed (p888).
Access the next or preceding page.	Press ⊕ (PAGE +) or ⊖ (PAGE –).	The next or preceding page appears.

How to	Action	Result
Superimpose the teletext display on the TV programme.	Press ⊕ once if you are in text mode, or press ⊕ twice if in TV mode. To return to the normal teletext display press ⊕ again.	The teletext displays are superimposed on the TV programmes.
Prevent a teletext page from being updated or changed.	Press ⊕ (HOLD). To resume normal teletext reception, press ⊕ .	The HOLD symbol (⊕) appears on the screen and the chosen sub-page is held until you cancel.
Enlarge the teletext display.	Press ⊕ once to enlarge the upper half. Press twice to enlarge the lower half. Press again to restore the normal display.	The upper half is enlarged.
Reveal concealed information (e.g. answers to a quiz).	Press ⊕ (REVEAL). Press again to conceal the information.	The information is revealed.
Watch the TV programme while waiting for a requested page to be displayed.	1. Request a new page.	The numbers are entered.
	2. Press ⊕ (TEXT CL).	The TV program is displayed, and the requested page number and other teletext data appear at the top of the screen.
	3. When the requested page has been captured, the page number remains and the other data disappears.	
	4. Press ⊕ to view this page.	The requested page is displayed.

Some of the features may not be available depending on the Teletext service.

1-6. OPERATION CONNECTIONS/OPERATIONS

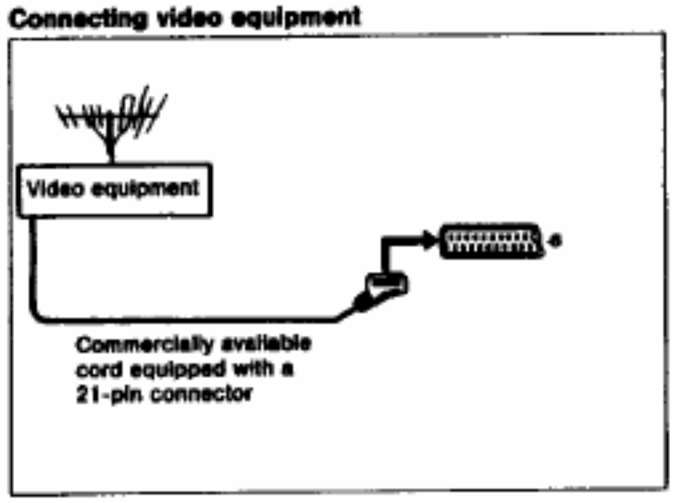
You can connect video equipment such as VTRs and video disc players to the TV.

How to connect video equipment to the TV

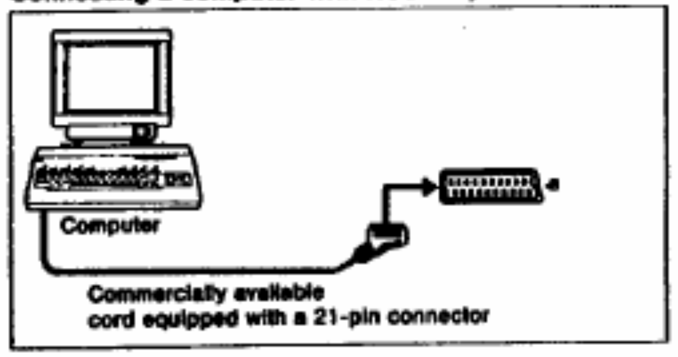
This TV has 2 different input connectors and 1 output signal.

Connector	Acceptable input signal	Available output signal
1 -⊖	Normal audio/video and RGB signal	Audio/video from TV tuner
-⊕,-⊖-⊖ on the front	Normal audio/video and S video signal	No outputs

Connecting video equipment

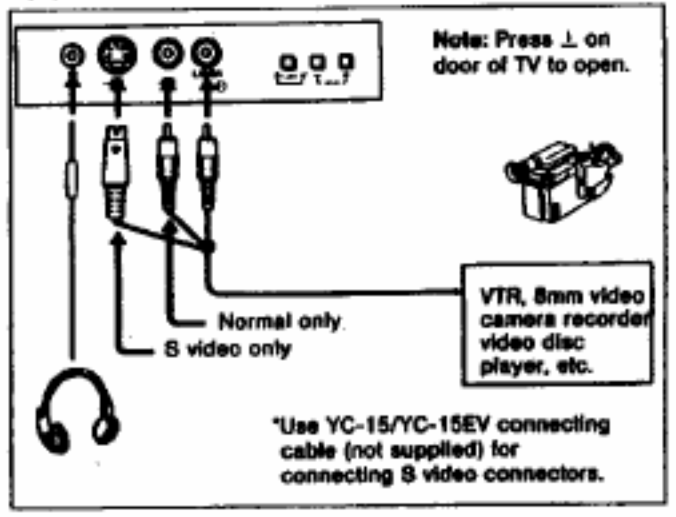

Video equipment
Commercially available cord equipped with a 21-pin connector

Connecting a computer with RGB output


Computer
Commercially available cord equipped with a 21-pin connector

Connecting video equipment temporarily

It is convenient to use the front connectors when connecting equipment such as a video camera recorder.


Note: Press ⊥ on door of TV to open.
Normal only
S video only
VTR, 8mm video camera recorder video disc player, etc.

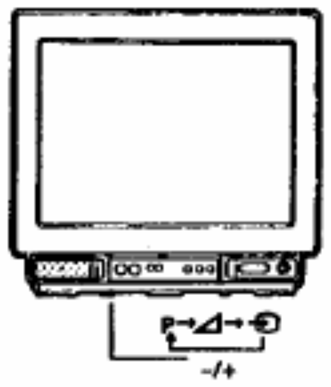
*Use YC-15/YC-15EV connecting cable (not supplied) for connecting S video connectors.

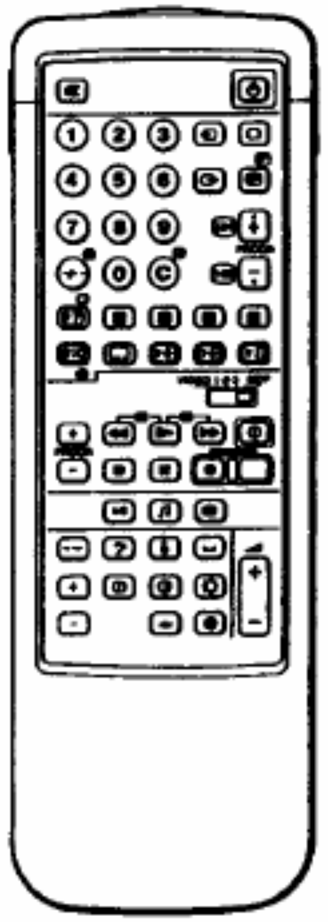
To connect a VTR using the ⊤ terminal
Connect the aerial output of the VTR to the aerial terminal ⊤ of the TV.

Note
If you connect your VTR to the aerial terminal of the TV, it is recommended that programme number 0 is used to tune in the video signal.

S video input (Y/C input)
Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals. Separating the Y and C signals prevents them from interfering with one another, and therefore improves picture quality (especially luminance). This TV is equipped with S video input through which these separated signals can be input directly.

If the picture or the sound is distorted
Move the VTR away from the TV.

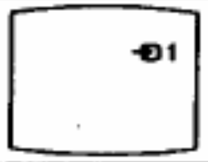




How to view the video input picture

You can view the picture of video equipment connected to the input terminals by selecting the input mode.

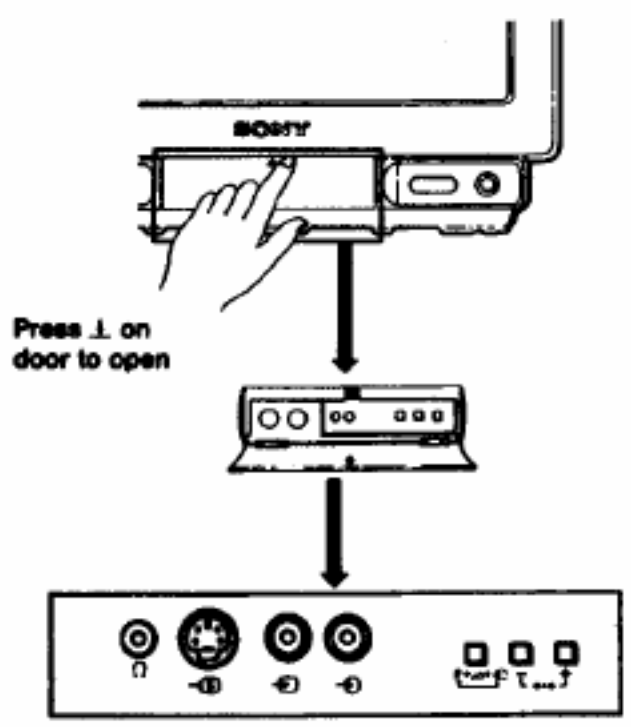
Operation

Action	Result	
Press ⇥ repeatedly to select the desired input.		Symbol for the selected input appears. (See the table below.)
To return to the TV mode, press the ○ button.		

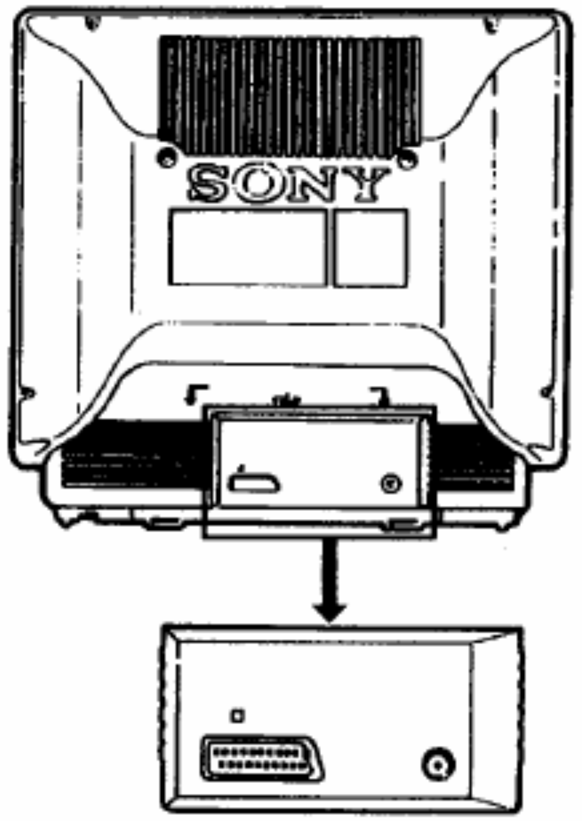
Input modes

Symbol	Result
⇥1	Audio/video input through the ⇥ connector.
⇥̈	RGB input through the ⇥ connector.
⇥3	Audio/video input through ⇥ and ⇥ jacks on the front.
⇥3	S video input through the ⇥ connectors on the front (4-pin connector).
You can also select the input mode using the P→⊿→⇥ button on the TV. In this case, first select ⇥ and then press +/− buttons to select the input.	

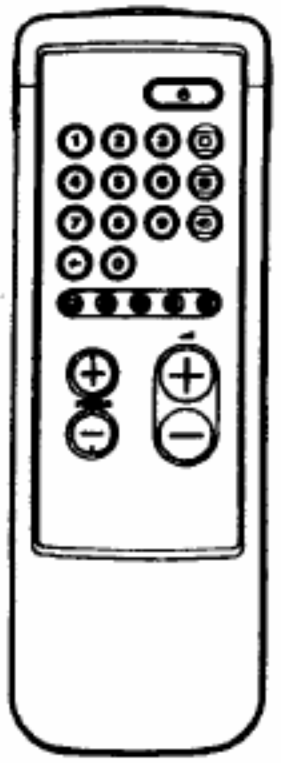
A



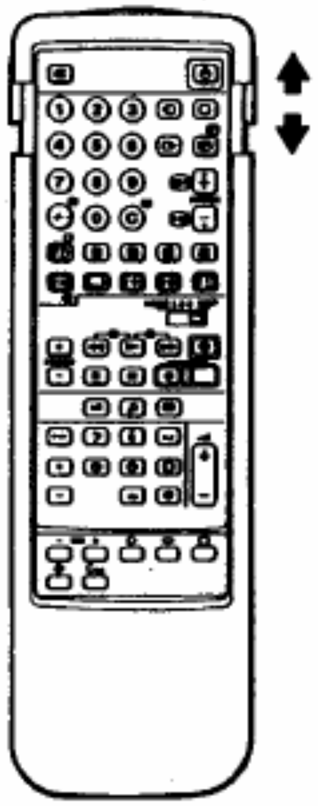
B



C



D



This section briefly describes the buttons and controls on the TV set and on the Remote Commander. For more information, refer to the pages given next to each description.

A TV set – Front

Sign	Name	
⏀	Main power switch	
⏻	Standby indicator	
∩	Headphones jack (stereo minijack)	
⊸Ⓢ ⊸ ⊸	Input jacks (S-video/video/audio)	
P→⊿→⊸	Function selector (Programme/volume/input)	
– + →••←	Adjustment buttons for function selector	

B TV set – Rear

Sign	Name	
⊸	21-pin Euro-AV connector (RGB/video input, TV output	
╥	Aerial terminal (IEC type)	

C Remote Commander – simple side

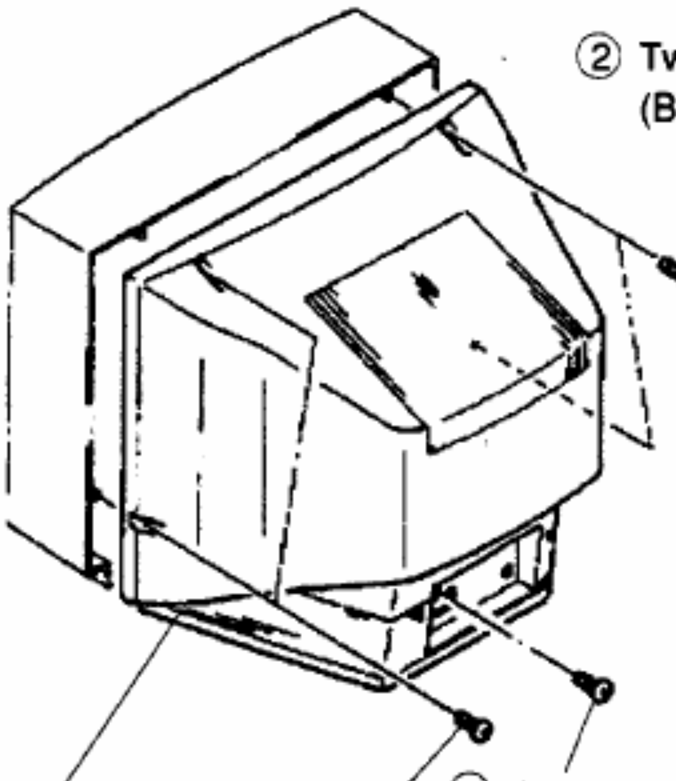
Sign	Name	
⊸	Input mode selector	
▣	Teletext button	
▭ ▭ ▭ ▭	Fastext buttons	
▢	TV mode selector	
⏻	Standby button	
1,2,3,4,5, 6,7,8,9, and 0	Number buttons	
-/--	Double-digit entering button	
⊿ +/–	Volume control button	
PROG +/–	Programme selector	

D Remote Commander – full function side

Sign	Name	
🔇	Mute on/off button	
⏻	Standby button	
1,2,3,4,5, 6,7,8,9, and 0	Number buttons	
⊸	Input mode selector	
▢	TV power on/TV mode selector button	
▣	Teletext button	
♫	Music button	
-/--	Double-digit entering button	
C	Direct channel entering button	
◎	Request time display	
▣ ▣ ▢ ▣ ▣ ▣ ▣ ▣ ▣ ▣	Teletext operation buttons	
▭ ▭ ▭ ▭	Fastext buttons	
⊡	On-screen display button	
→••←	Picture and sound adjustment reset button	
⊿ +/–	Volume control	
PROG +/–	Programme selector	
◑ ☼ ◕ ⩍ 𝄢 ♦ +/–	Picture and sound controls	
VIDEO 1/2/3, MDP	Video equipment selector	
◀◀ ▶ ▶▶ ■ ❚❚ ●	Video equipment operation buttons	
Coo	Programme number clear button	
⟐	Channel preset button	
– ⊞ +	Tuning buttons	
◇	Channel store button	
▢	Station label button	

SECTION 2
DISASSEMBLY

2-1. REAR COVER REMOVAL



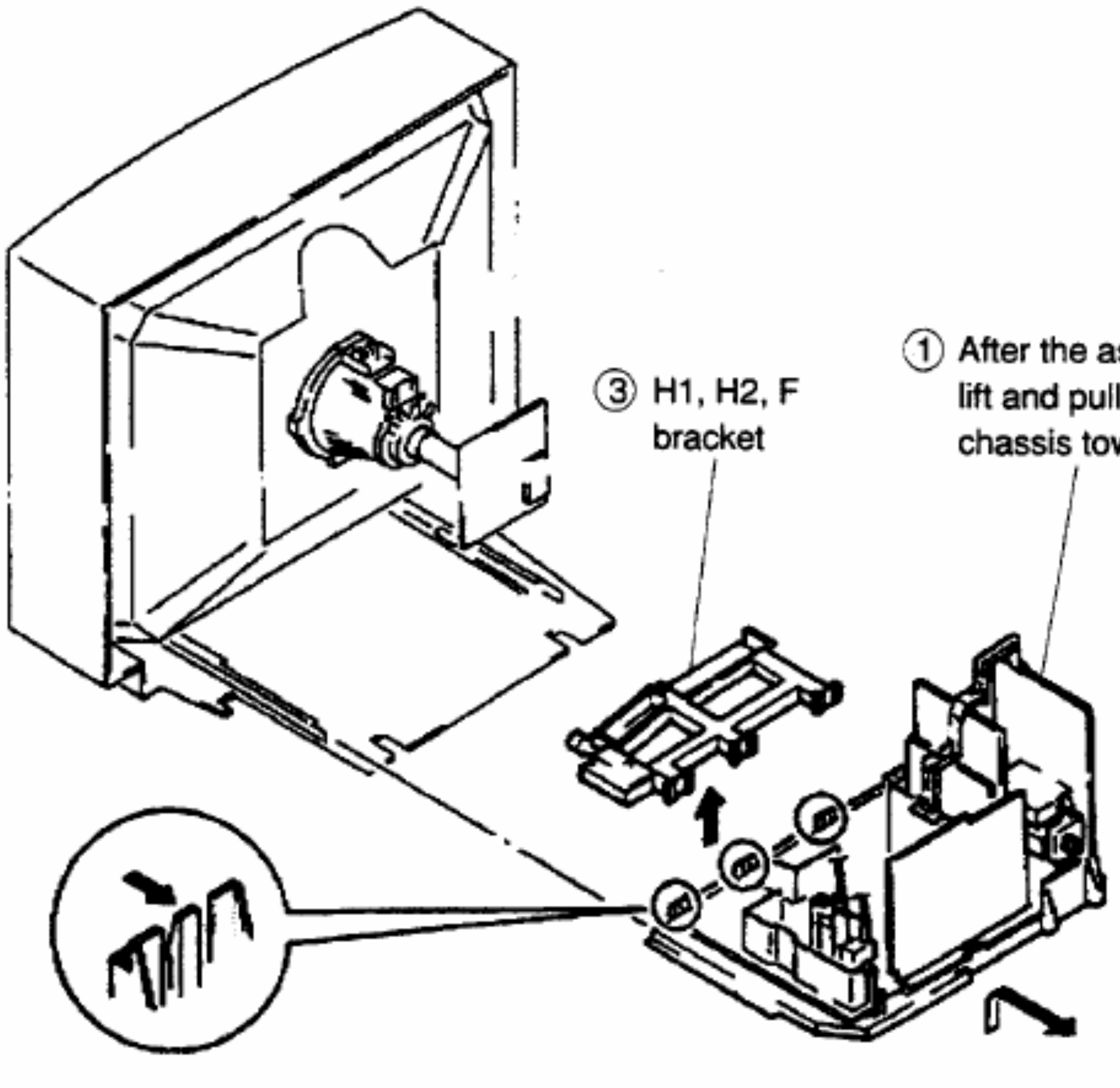
② Two screws
(BVTP 4x16)

④ Rear cover

① One screw
(BVTP 4x16)

③ Two screws
(BVTP 4x16)

2-2. CHASSIS ASSEMBLY REMOVAL

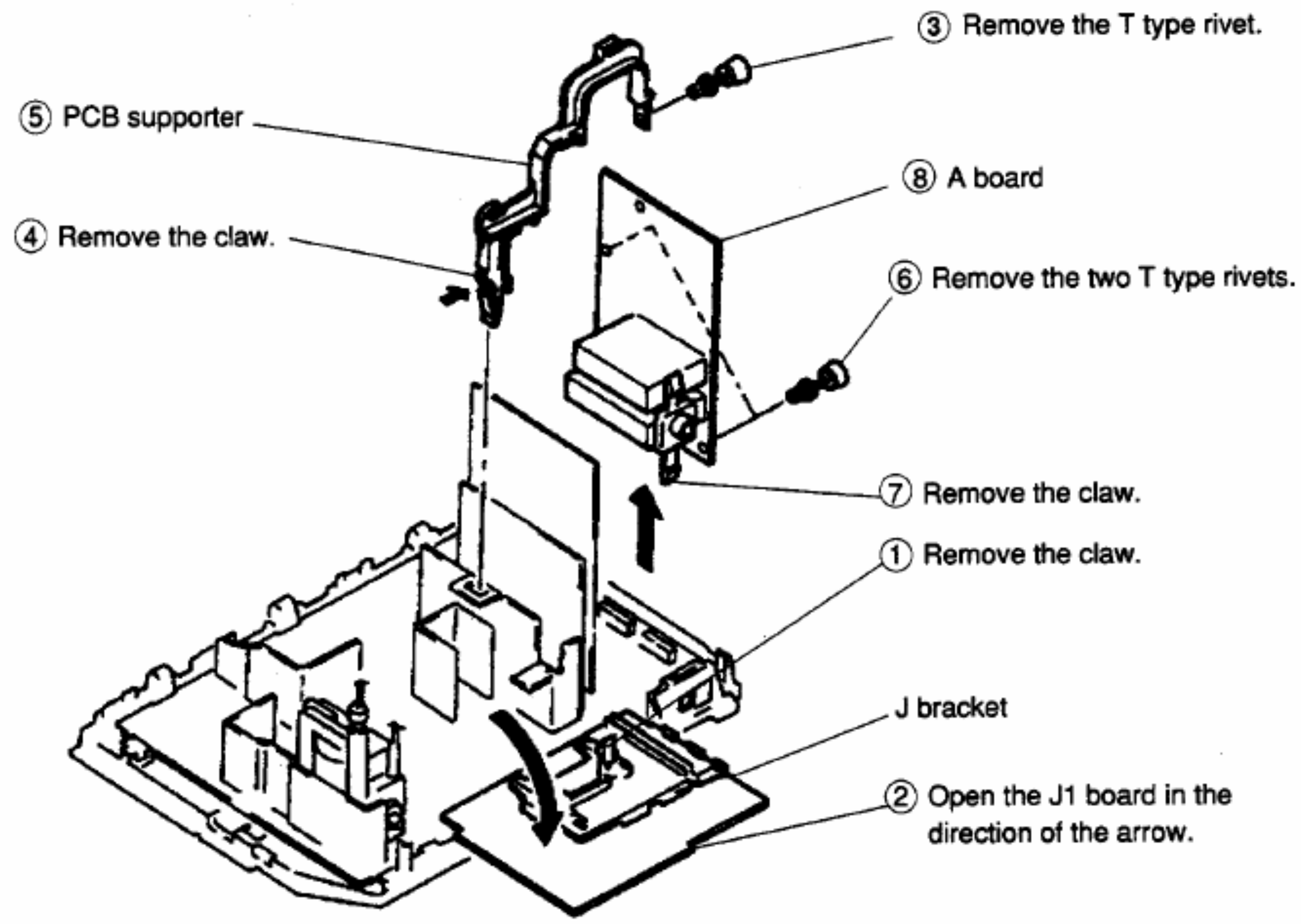


③ H1, H2, F
bracket

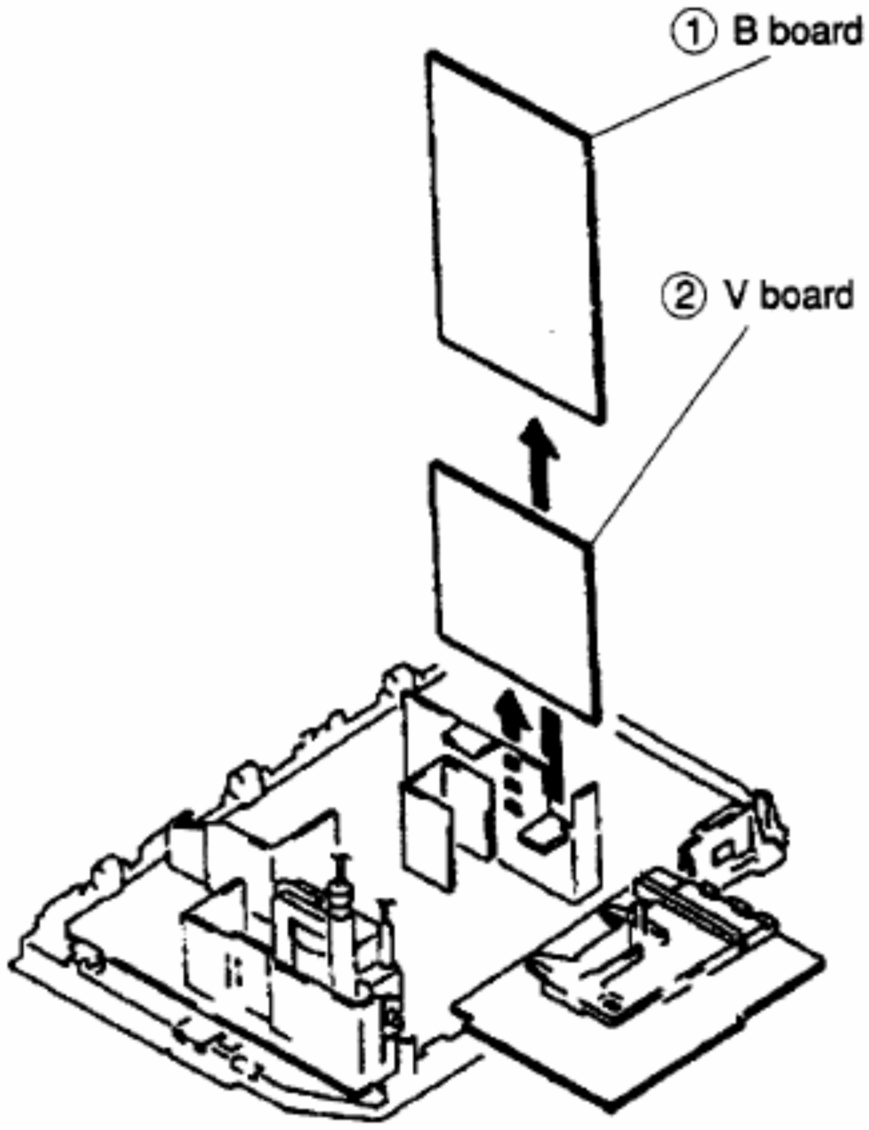
① After the assembly of the main chassis, lift and pull out the rear part of the main chassis toward the rear.

② Push the three claws of the main chassis in the direction of the arrow and remove the H1, H2, F bracket upwards.

2-3. A AND J1 BOARDS REMOVAL


③ Remove the T type rivet.
⑤ PCB supporter
⑧ A board
④ Remove the claw.
⑥ Remove the two T type rivets.
⑦ Remove the claw.
① Remove the claw.
J bracket
② Open the J1 board in the direction of the arrow.

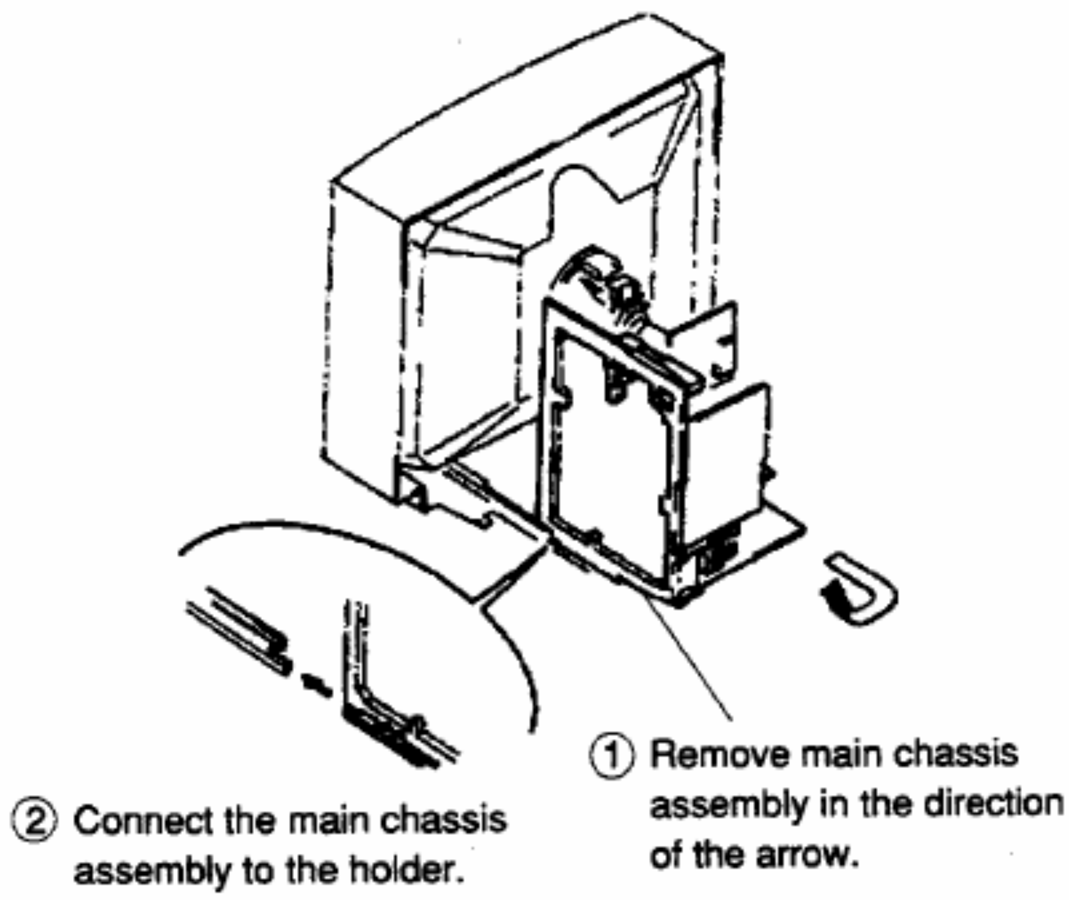
2-4. B AND V BOARDS REMOVAL



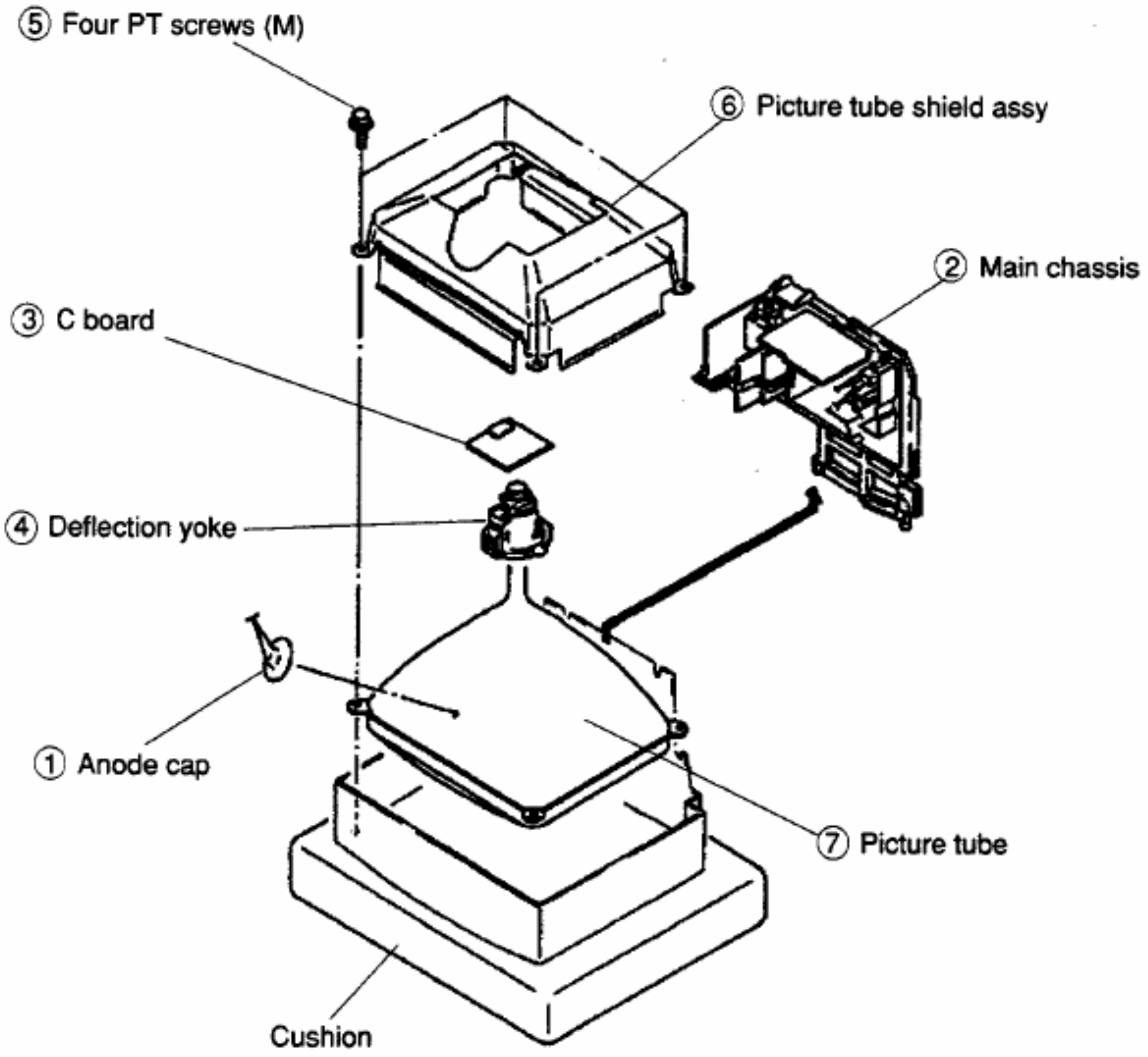
Note: 10 pin extension cable (S-0945-001-0)

2-5. SERVICE POSITION

- * Remove the H1, H2, F bracket from the main chassis assembly and then perform the following servicing. (Refer to 2-2. CHASSIS ASSEMBLY REMOVAL.)


② Connect the main chassis assembly to the holder.
① Remove main chassis assembly in the direction of the arrow.

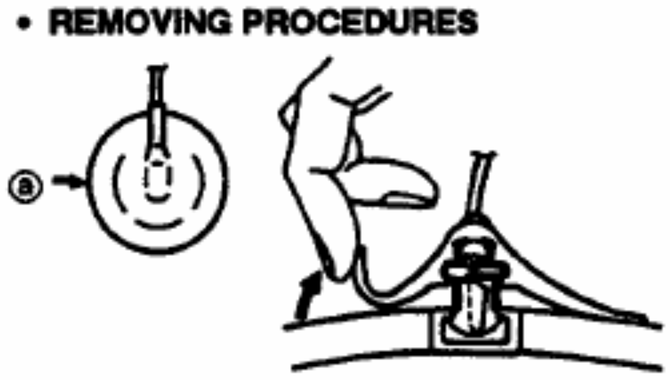
2-6. PICTURE TUBE REMOVAL



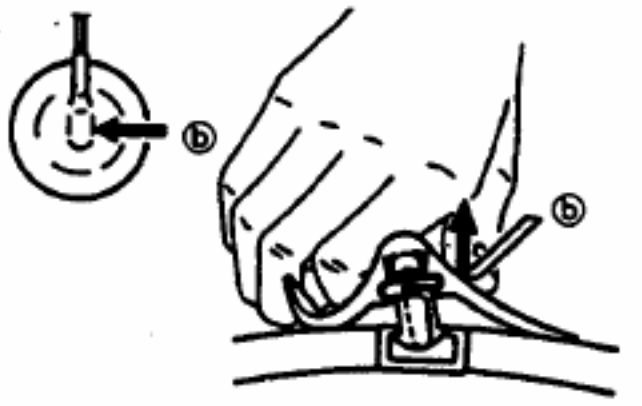
• REMOVAL OF ANODE-CAP

Note: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield, or carbon painted on the CRT, after removing the anode.

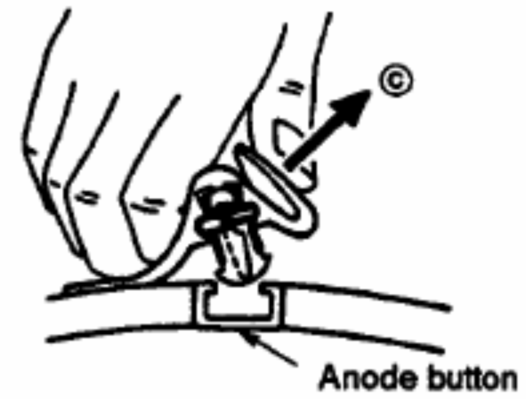
• REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.



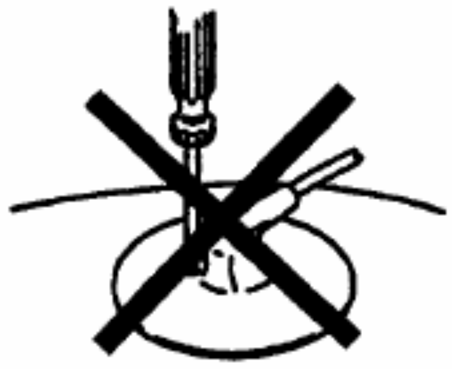
③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

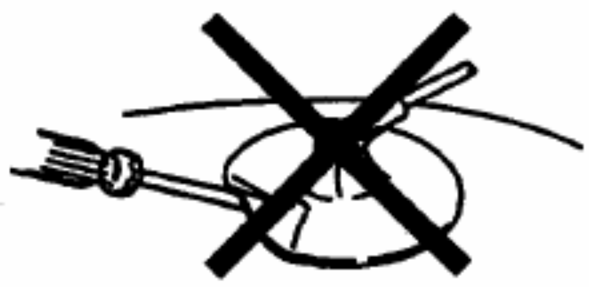
• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material !

② Don't press the rubber hardly not to hurt inside of anode-caps !
A metal fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly ! The shatter-hook terminal will stick out or hurt the rubber.





SECTION 3
SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there is specific instruction to the contrary, carry out these adjustments with the rated power supply.
- Unless there is specific instruction to the contrary, set the controls and switches this way :

◑ Contrast 80%
(or remote control normal)
☼ Brightness 50%

- Carry out the following adjustments in this order:

1. Beam landing
2. Convergence
3. Focus
4. White balance

Note: Testing equipment required
1. Color bar/pattern generator
2. Degausser
3. DC power supply
4. Digital multimeter
5. Oscilloscope

Preparation:

- In order to reduce the influence of geomagnetism on the set's picture tube face it east or west.
- Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input the white signal with the pattern generator.
   Contrast ┐
   Brightness ┘ normal
2. Position neck ass'y as shown in Fig. 3-2.
3. Set the pattern generator raster signal to red.
4. Move the deflection yoke to the rear and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side.
   (see Fig. 3-1 through 3-3.)
5. Move the deflection yoke forward and adjust so that entire screen is red. (See Fig. 3-1.)
6. Switch the raster signal to blue, then to green and verify the condition.
7. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
8. If the beam does not land correctly in all the corners, use a magnet to adjust it.
   (See Fig. 3-4.)

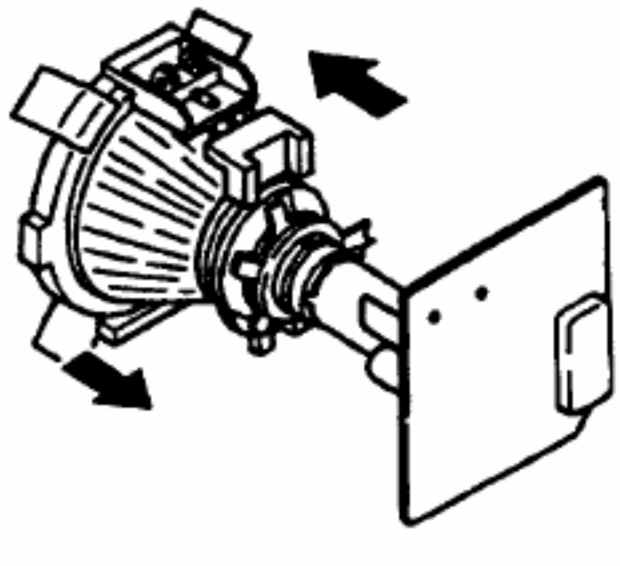


Fig. 3-1

Fig. 3-2

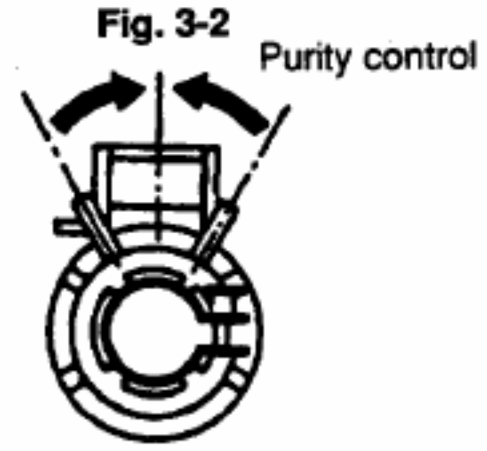
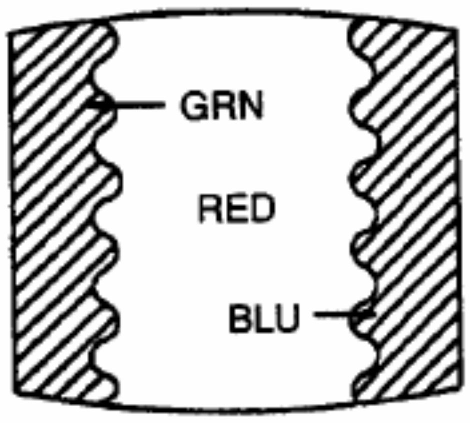


Fig. 3-3



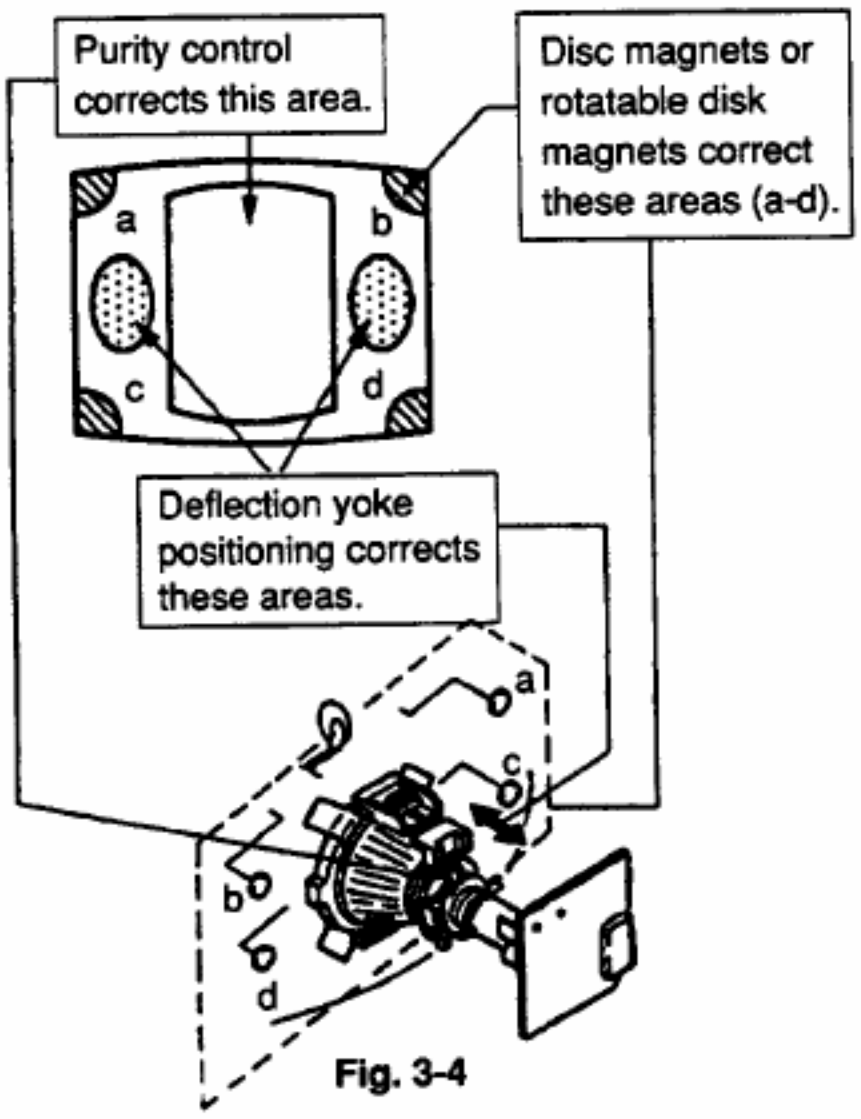

Purity control corrects this area.
Disc magnets or rotatable disk magnets correct these areas (a-d).
a
b
c
d
Deflection yoke positioning corrects these areas.
a
c
b
d

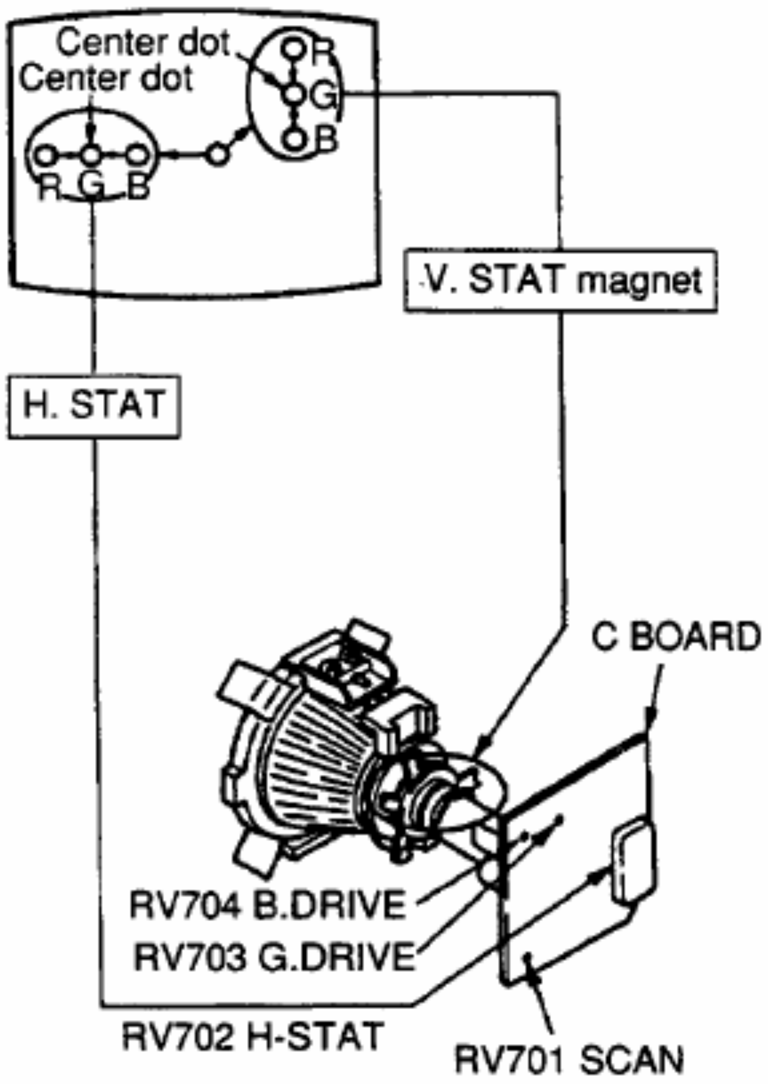
Fig. 3-4

3-2. CONVERGENCE

Preparation :

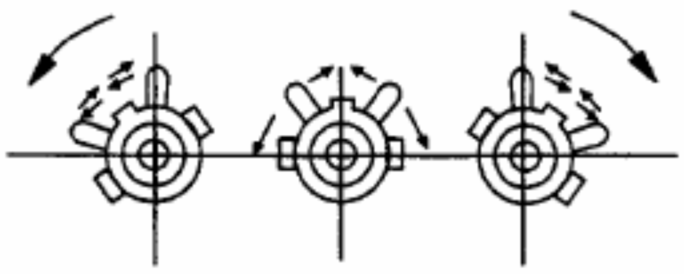
- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

(1) Horizontal and vertical static convergence



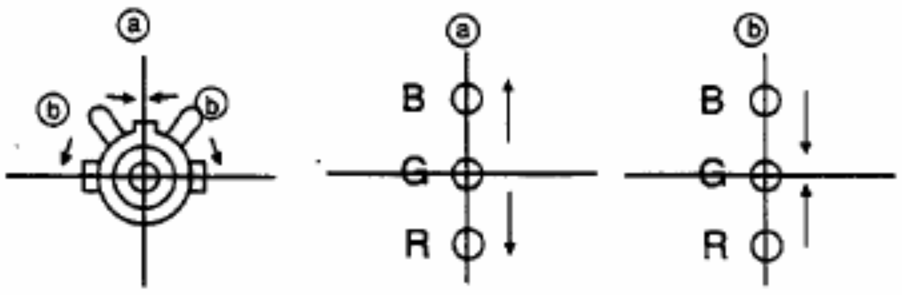
1. (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the center of the screen.
2. (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green, and blue points together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V. STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other.)

- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.

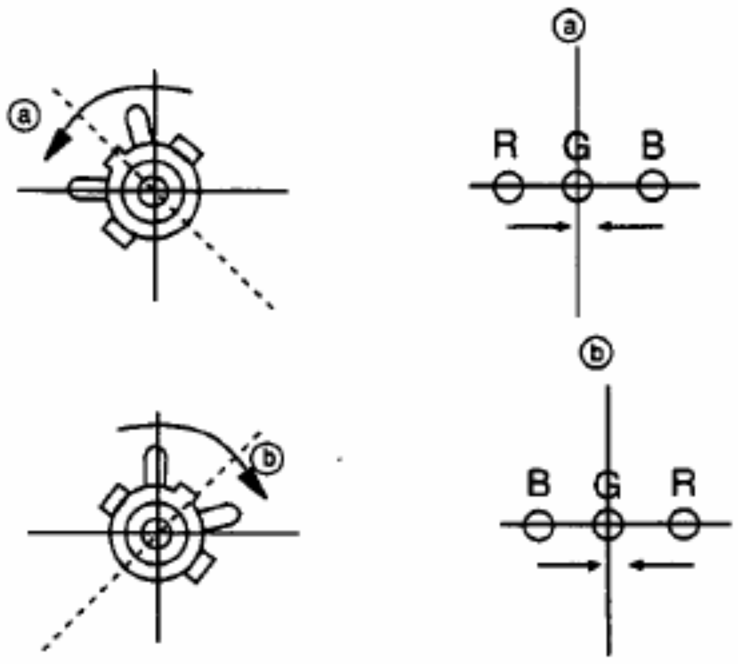


4. If the V.STAT magnet is moved in the direction of the ⓐ and ⓑ arrows, the red, green, and blue points move as shown below.

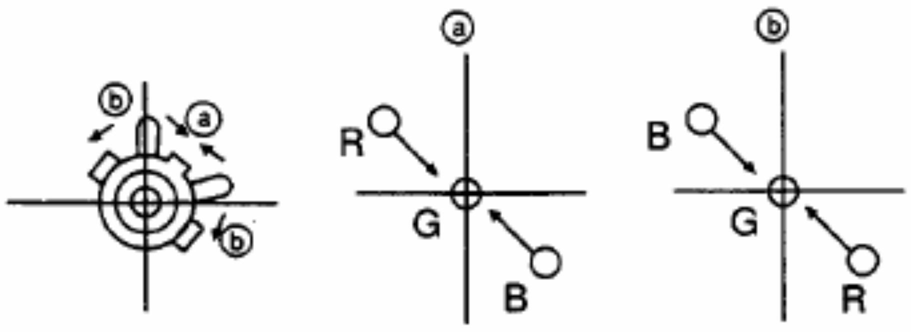
①



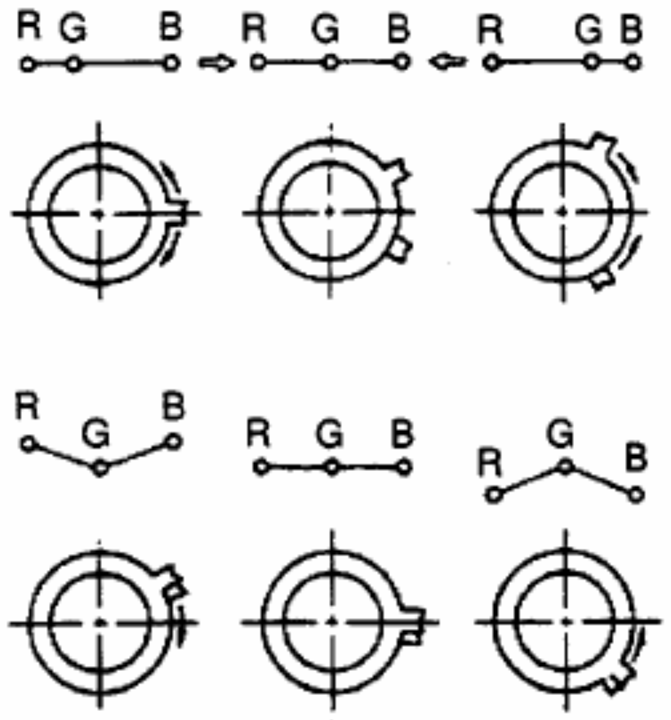
②

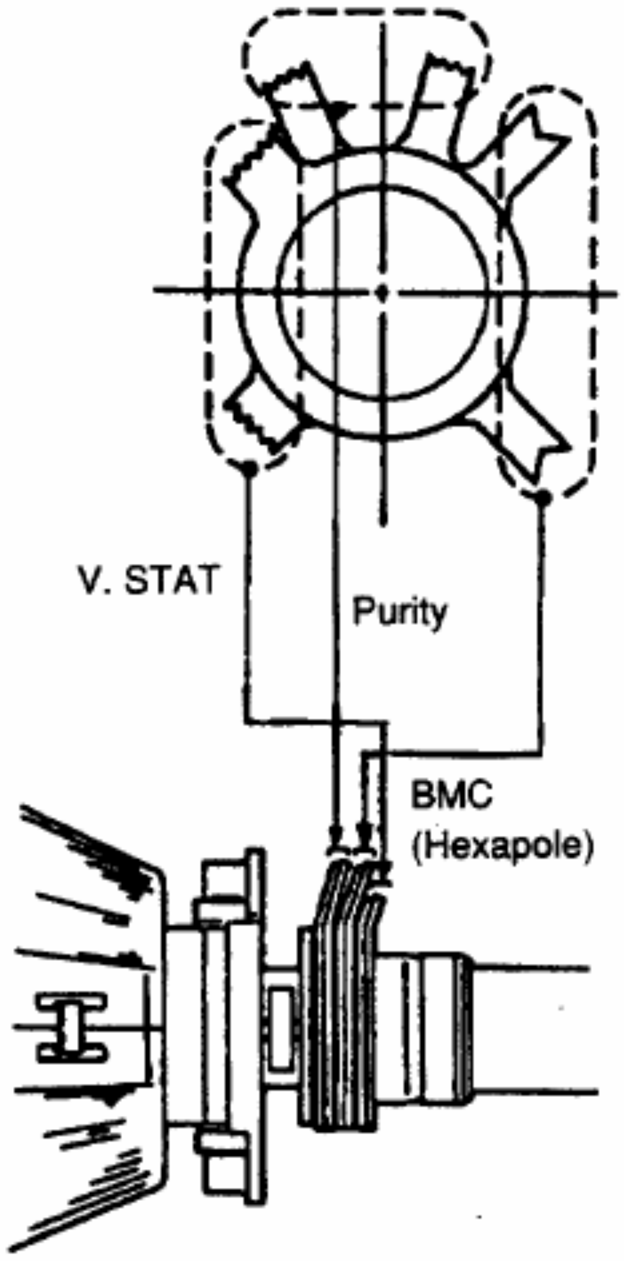


③



- Operation of BMC (Hexapole) Magnet





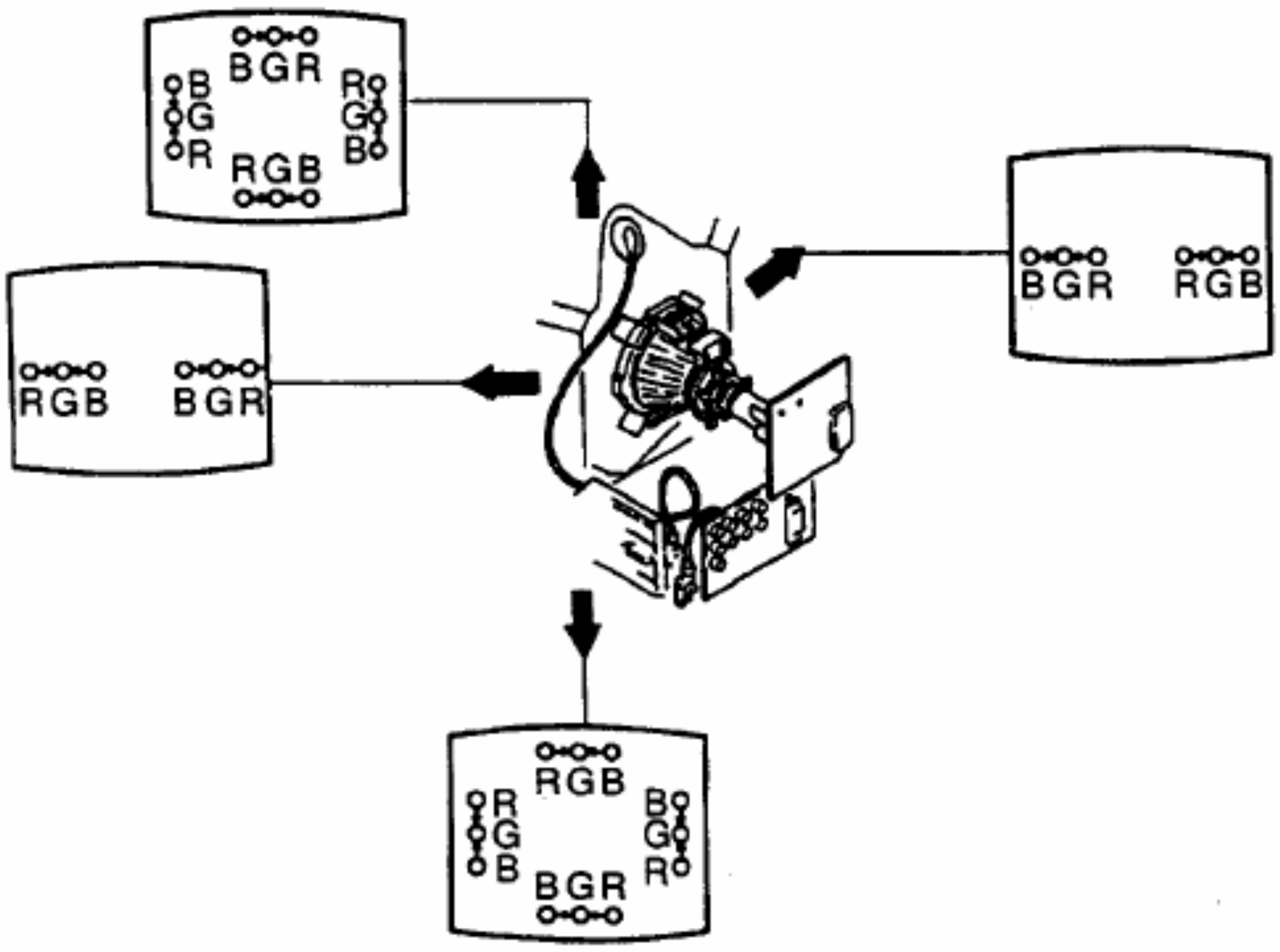
- The respective dot positions resulting from moving each magnet interact, so be sure to perform adjustment while tracking.
  Use the H.STAT VR to adjust the red, green, and blue dots so they coincide at the center of screen (by moving the dots in the horizontal direction).

(2) Dynamic convergence adjustment

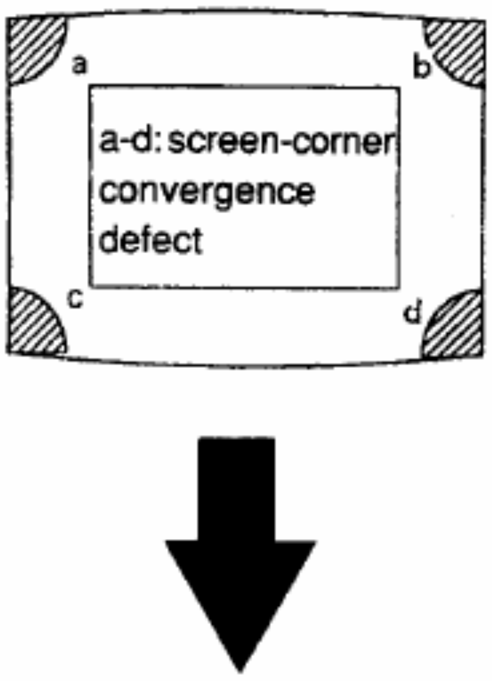
Preparations:

Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

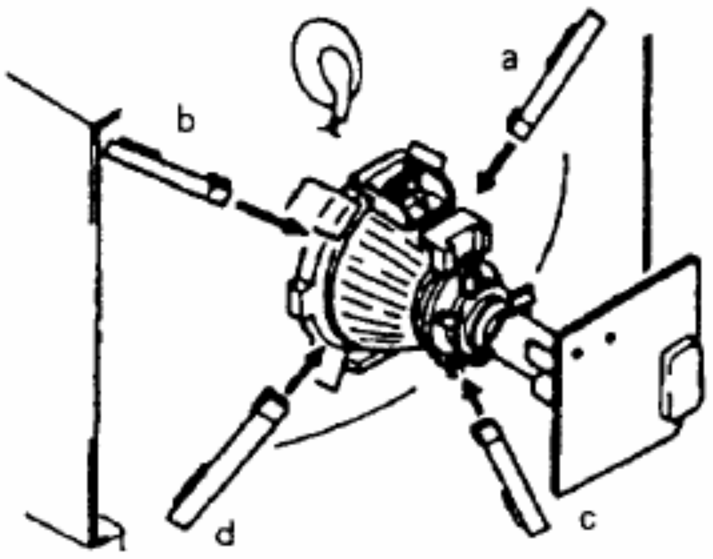
1. Slightly loosen the deflection yoke screws.
2. Remove the deflection yoke spacer.
3. Move the deflection yoke as shown in the figure below and optimize the convergence.
4. Tighten the deflection yoke screws.
5. Install the defelection yoke spacer.



(3) Screen corner convergence



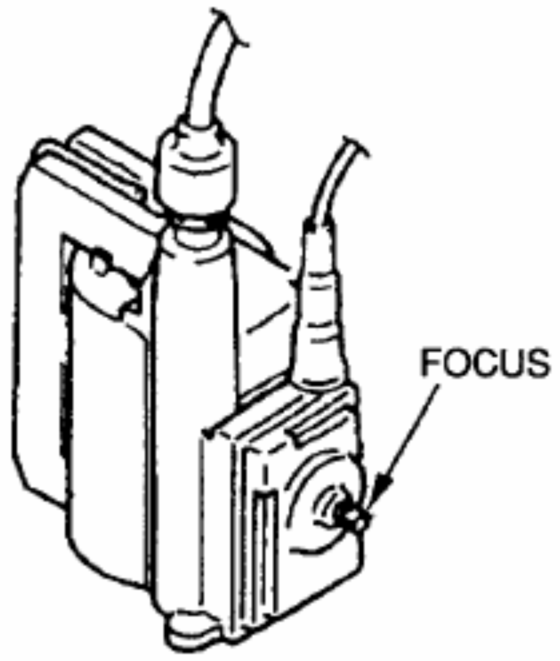
Install the permalloy assembly for the section with faulty.



Parmalloy ass'y, correction.

3-3. FOCUS

Adjust the focus to optimize the screen.



3-4. WHITE BALANCE

SCREEN G2 SETTING

1. Input the dot signal from the pattern generator.
2. Set the picture brightness control to its lowest level.
3. Apply 170V DC to the R, G, and B cathodes with an external power supply.
4. While watching the picture, adjust G2 control RV701 (Screen) to the point just before the return lines disappear.

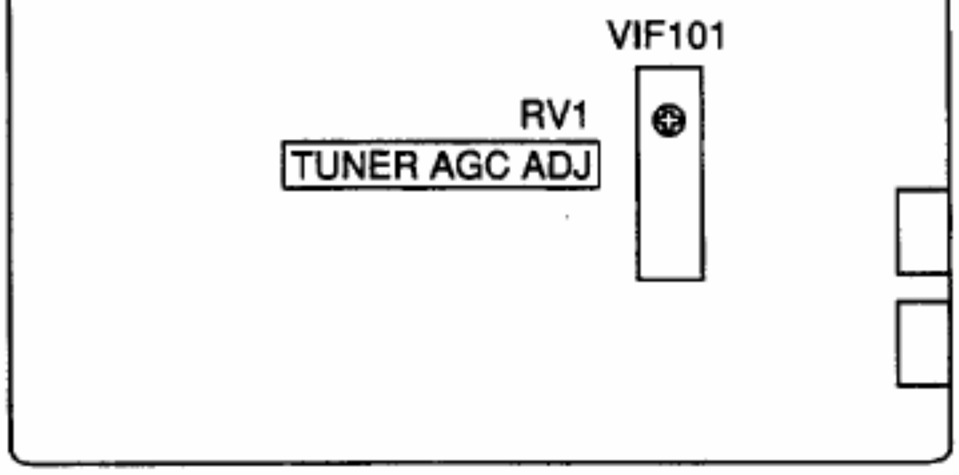
WHITE BALANCE ADJUSTMENT

1. Input an all-white signal from the pattern generator.
2. Set the picture brightness and color controls to their normal levels.
3. Use RV704 (B Drive) and RV703 (G Drive) to adjust white balance.

In the adjustments below, have the picture color and brightness settings at their normal levels unless there is a specific instruction to the contrary.

SECTION 4
CIRCUIT ADJUSTMENTS

4-1. A BOARD ADJUSTMENT

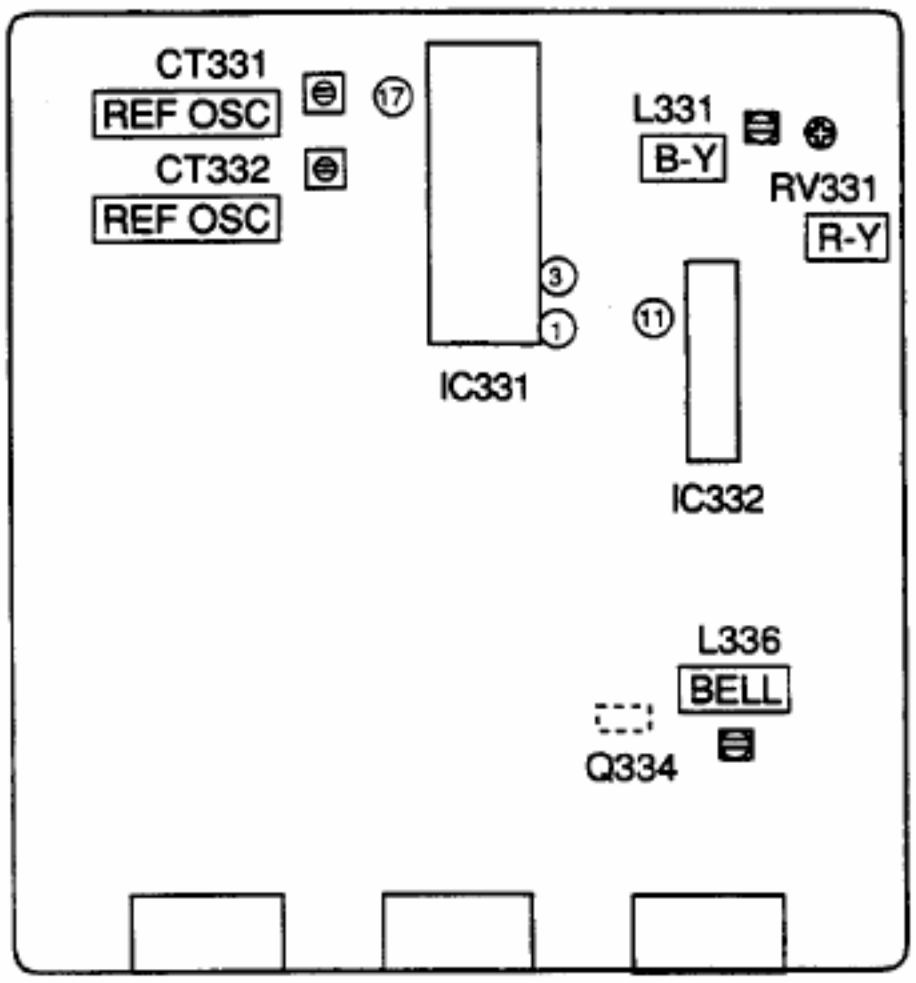


A BOARD (COMPONENT SIDE)

TUNER AGC ADJUSTMENT (VIF101, RV1)

1. Align with an appropriate signal between stations.
2. Adjust RV1 so that snow noise and cross modulation just disappear from the picture.

4-2. B BOARD ADJUSTMENTS



B BOARD (COMPONENT SIDE)

REFERENCE OSCILLATOR ADJUSTMENT (CT332 8.8MHz)

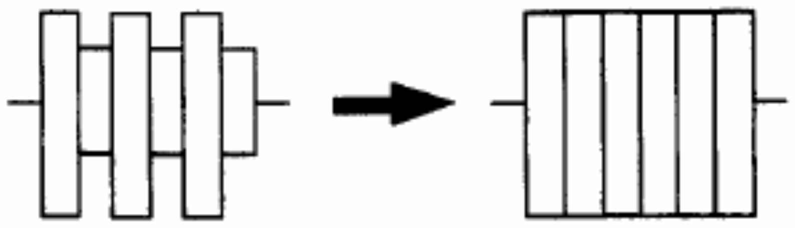
1. Input a PAL color bar signal.
2. Ground pin ⑰ of the IC331.
3. Adjust CT332 to obtain synchronization.

REFERENCE OSCILLATOR ADJUSTMENT (CT331 7.16MHz)

1. Input a NTSC color bar signal.
2. Ground pin ⑰ of IC331.
3. Adjust CT331 to obtain synchronization.
4. Remove the jumper grounding pin ⑰ of IC331.

BELL FILTER ADJUMENT (L336)

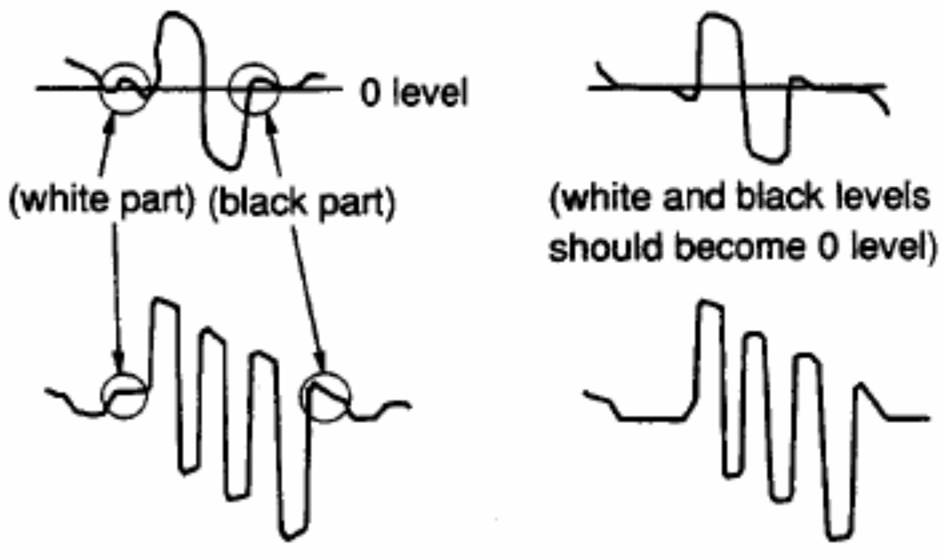
1. Input a SECAM color bar signal.
2. Connect the oscilloscope to the emitter of Q334.
3. Adjust L336 so that the waveform is flat.



<Before Adjustment> <After Adjustment>

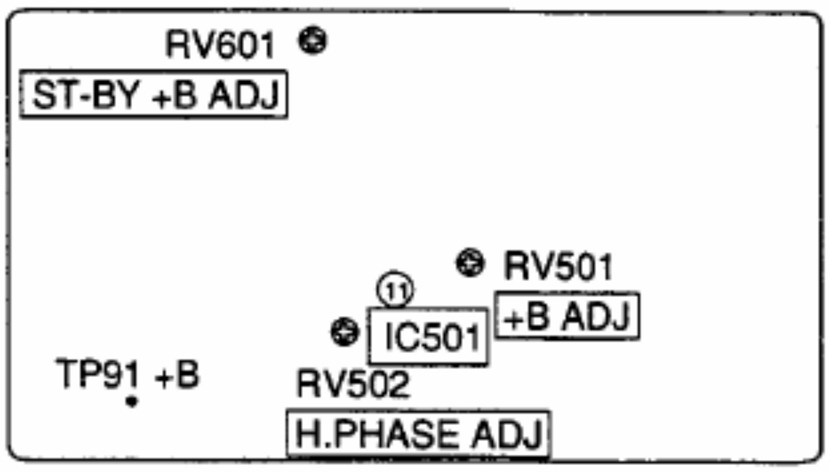
DISCRIMINATOR ADJUSTMENTS (RV331 and L331)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to pin ① of IC331.
3. Adjust RV331 until the white and black sections of the waveform at pin ① are at the 0 level.
   Connect the oscilloscope to pin ③ of IC331.
4. Adjust L331 until the white and black sections of the waveform at pin ③ are at the 0 level.


0 level
(white part) (black part)
(white and black levels should become 0 level)

<Before Adjustment> <After Adjustment>

4-3. D BOARD ADJUSTMENTS



D BOARD (COMPONENT SIDE)

+B ADJUSTMENT (RV501)

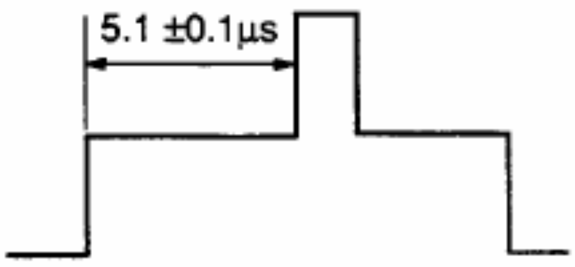
1. Connect the digital multimeter to TP91.
2. Adjust RV501 to obtain 135 ± 0.2V.

ST-BY +B ADJUSTMENT (RV601)

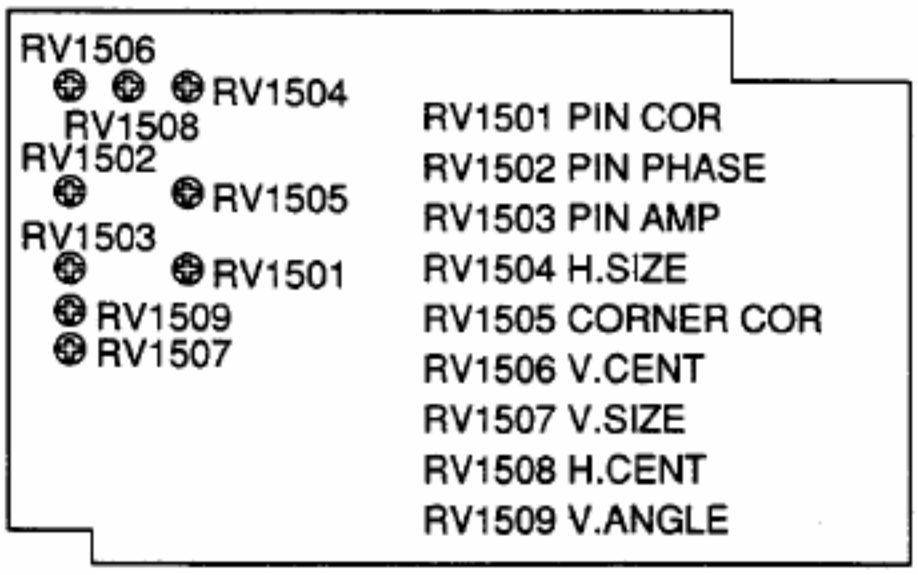
1. Put the system into ⏻ standby mode (remote commander).
2. Connect the digital multimeter to TP91.
3. Adjust RV601 to obtain 135 ± 3V.
4. Take the system out of ⏻ standby mode (remote commander).

H.PHASE ADJUSTMENT (RV502)

1. Input a PAL color bar signal.
2. Set the picture and brightness controls to their normal levels.
3. Set RV1508 (H.CENT) to its mechanical center.
4. Connect the oscilloscope to pin ⑪ (SCP) of IC501.
5. Rotate RV502 to adjust to 5.1 ± 0.1μs.

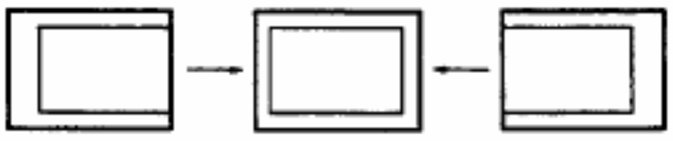


4-4. J1 BOARD ADJUSTMENTS

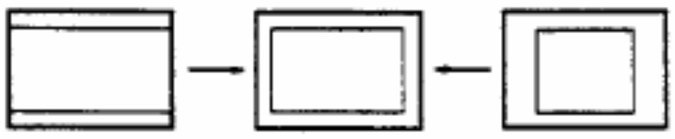


J1 BOARD (COMPONENT SIDE)

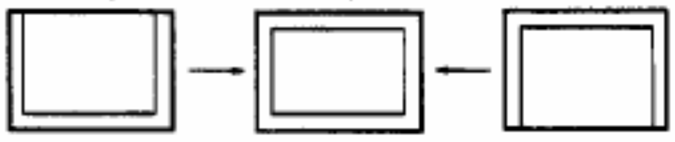
RV1508
H.CENT (HORIZONTAL CENTER)



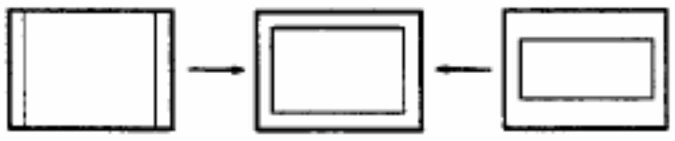
RV1504
H.SIZE (HORIZONTAL SIZE)



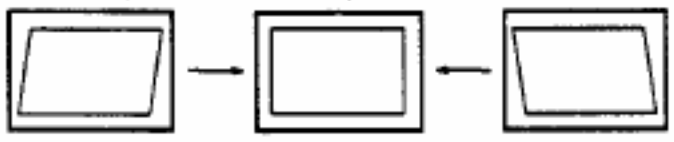
RV1506
V.CENT (VERTICAL CENTER)



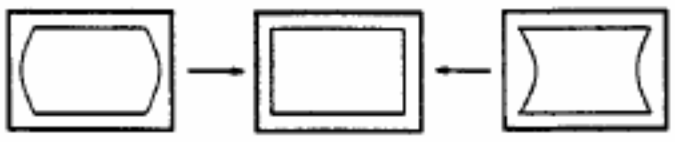
RV1507
V.SIZE (VERTICAL SIZE)



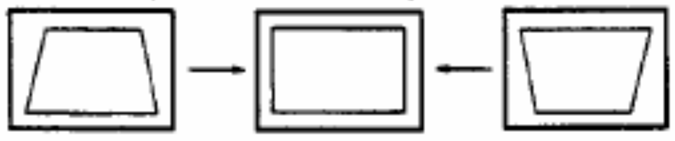
RV1509
V.ANGLE (VERTICAL ANGLE)



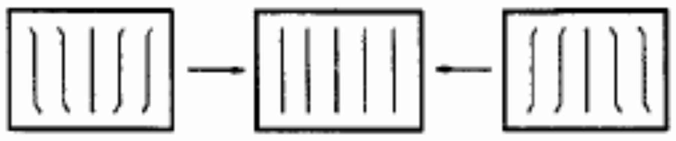
RV1503
PIN AMP (PINCUSHION AMPLIFIER)



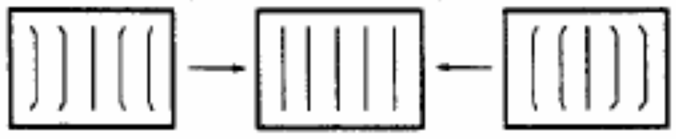
RV1502
PIN PHASE (PINCUSHION PHASE)



RV1501
PIN. COR (PINCUSHION CORRECT)

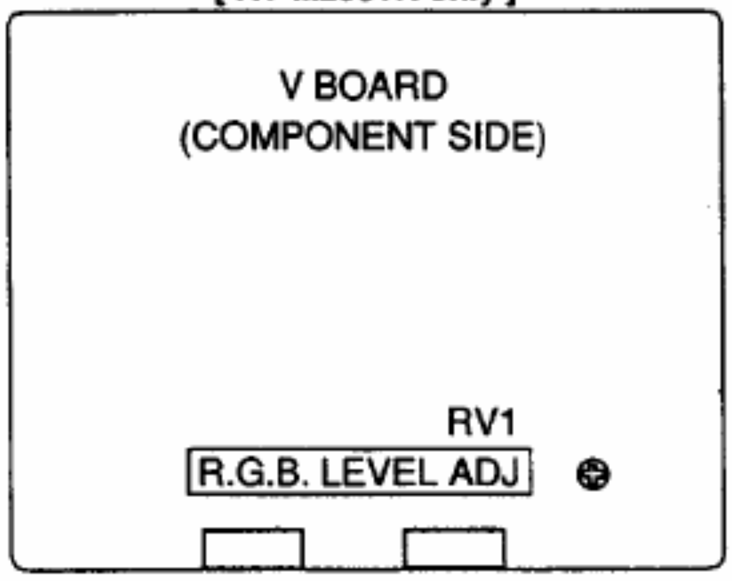


RV1505
CORNER COR (CORNER CORRECT)



4-5. V BOARD ADJUSTMENT

[KV-M2531K only]



RGB LEVEL ADJUSTMENT (RV01)

1. Maximize the picture setting.
2. Adjust RV01 so that the RGB output is 0.75V.

4-6. SECONDARY ADJUSTMENTS

SUB BRIGHTNESS ADJUSTMENT

1. Set the system to receive a test pattern.
2. Press → • ← on the remote commander to put the system into normal mode.
3. Switch off the power.
4. While depressing the adjusting buttons + and – simultaneusly, turn on the power. (SUB mode is obtained)
5. Minimize the ◑ contrast setting.
6. Adjust the ☼ brightness control so that the gray scale 0 IRE section is cut off completely and the 20 IRE section is barely glowing.
7. Depress the ◇ (store) button of the remote commander. (SUB mode is released)

If there is no test color pattern

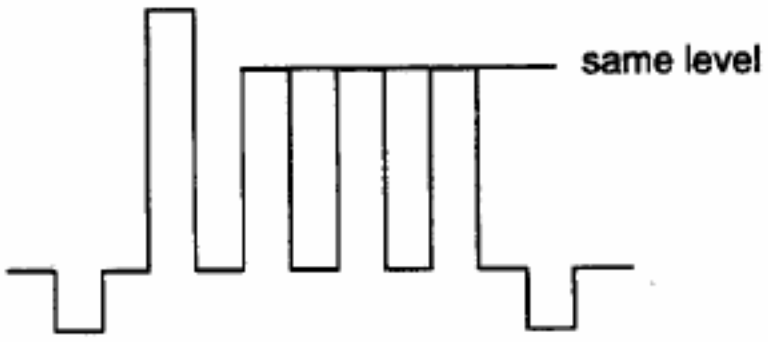
1. Set the system to receive a color pattern.
2. Press → • ← on the remote commander to put the system into normal mode.
   Set the ⊕ color to its normal state.

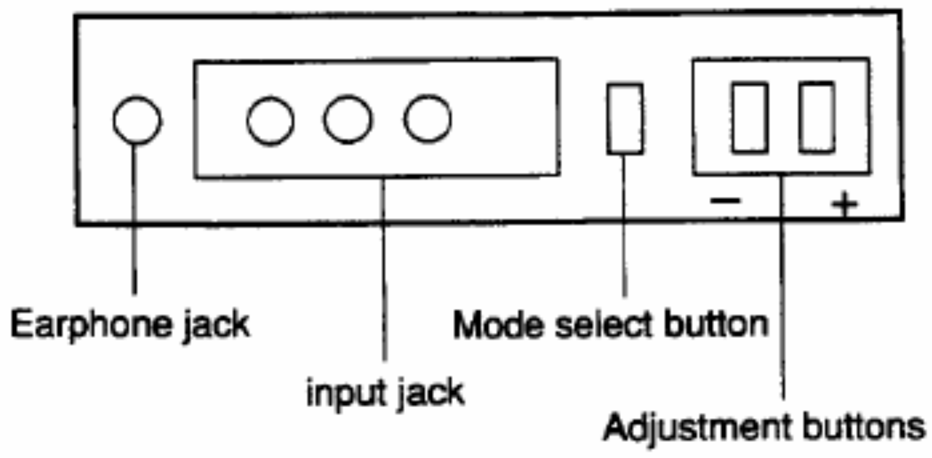
3–5. Steps are the same as above.

6. Since 20 IRE is nearly blue, adjust the ☼ brightness control so that the blue barely glows.
7. Same as step 7 above.
8. Press → • ← on the remote commander to put the system into normal mode.

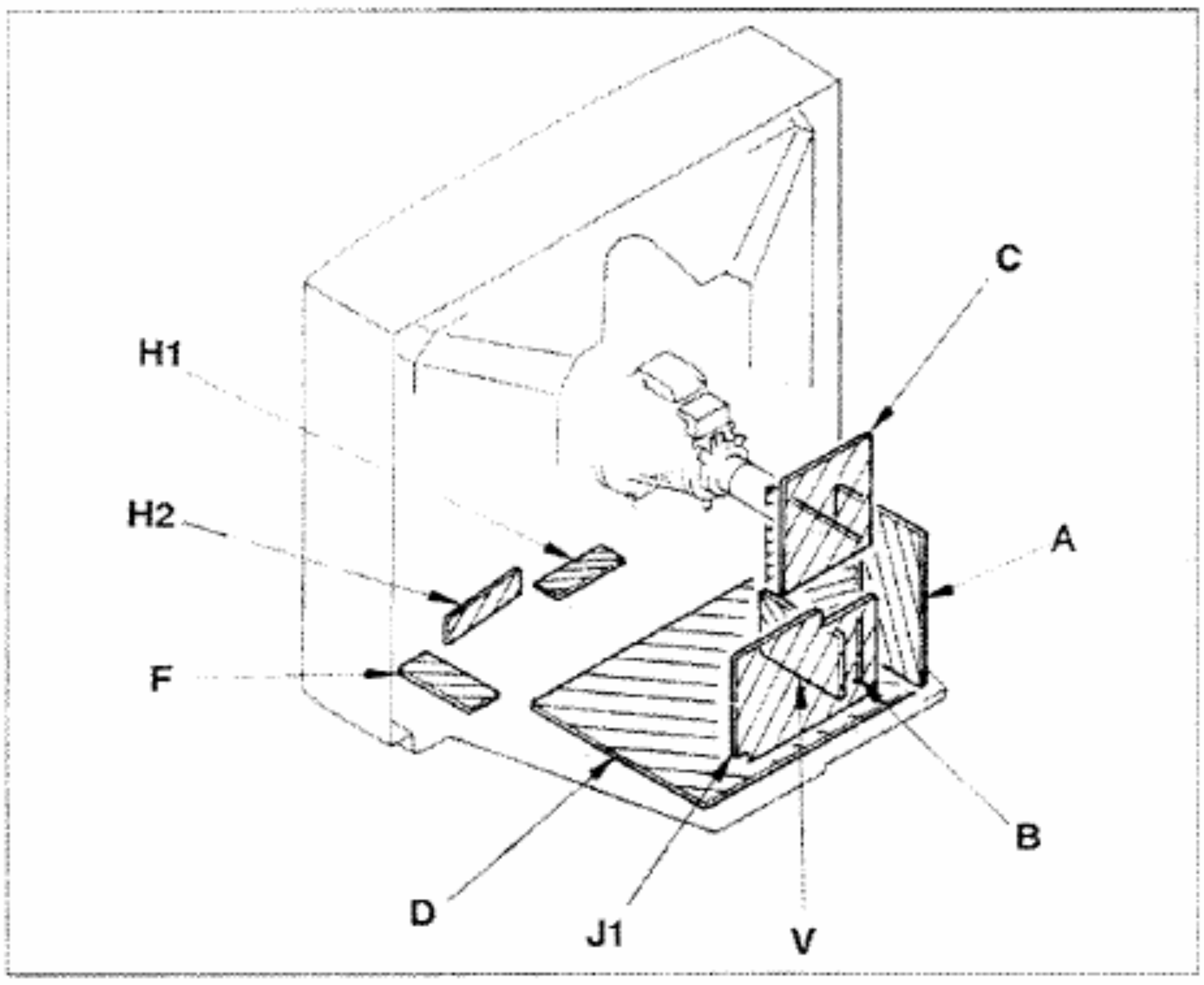
SUB COLOR ADJUSTMENT

1. Set the system to receive color bars.
2. Press → • ← on the remote commander to put the system into normal mode.
3. Cut off the power.
4. While depressing the adjustment buttons + and – simultaneusly, turn on the power. (SUB mode is obtained).
5. Adjust the color control so that the B out waveform (pin ⑤ of C board connector CNC72) is as shown in the figure below.
6. Depress the ◇ (store) button of the remote commander. (SUB mode is released)





5-2. CIRCUIT BOARD LOCATION



5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS - Conductor Side -

Note :

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms. kΩ = 1000Ω , MΩ = 1000KΩ
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5 mm
Rating electrical power ¼ W

- : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation, or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊥ : earth - ground.
- ⏚ : earth - chassis.
- : no mounted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with 10MΩ digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
- ━━ : B+ bus.
- ┈┈ : signal path. (RF)

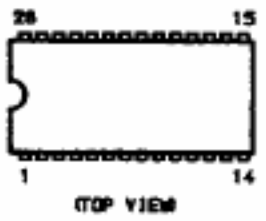
Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	:	ADJUSTABLE RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

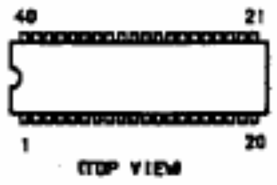
Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with part number specified.

5-4. SEMICONDUCTORS

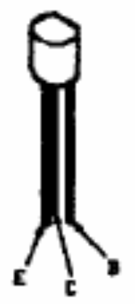
CXA1114P
TDA4580-V7
TDA6200
TEA2028B



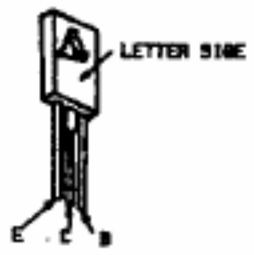
SDA20560-A012



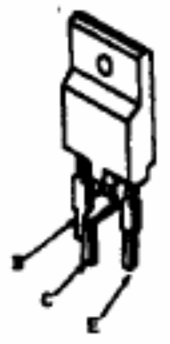
BF199



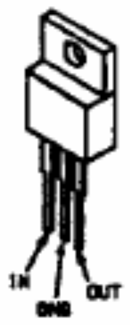
2SA1220A-P
2SC2688-LK



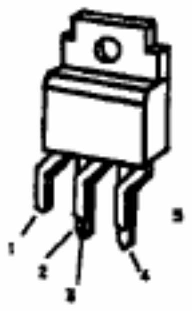
2SD1941-06



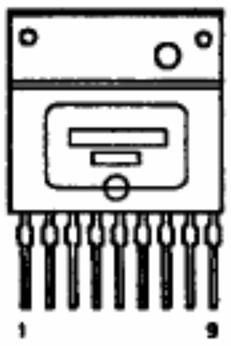
LM7812CT
TEA7605



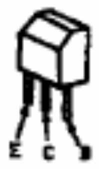
TDA2050



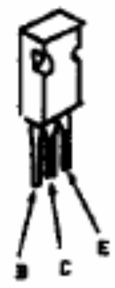
BF871



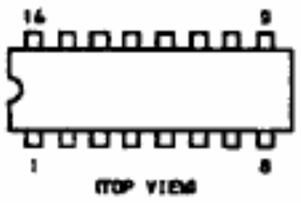
2SB734-34
2SD774-34



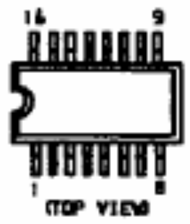
2SD2096-EF



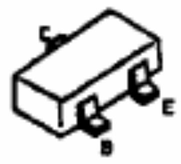
MC14051BCP
PCF8574
TDA4510-V8
TDA8442N3
TEA2260
μPD4053BC



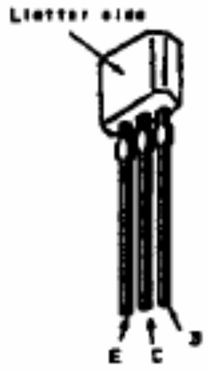
TDA4660V2



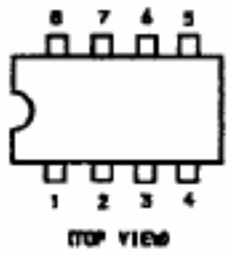
DTA144EK
DTC124EK
DTC144EK
2SA1162-G
2SC1623-L5L6
2SC2712-YG



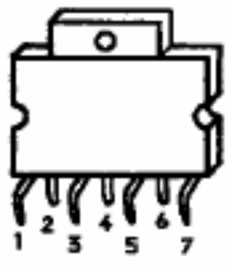
2SC2785-HFE



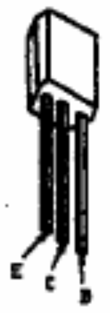
RC4558P
SDA2546
TEA2014A
TEA2031A



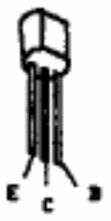
TDA8170



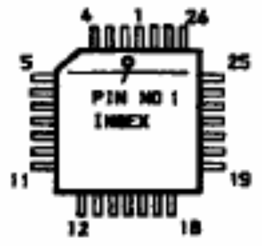
DTC144ES



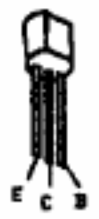
2SD789-34



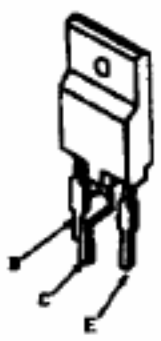
SBX1610-11



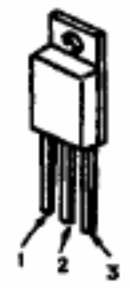
2SA1091-O



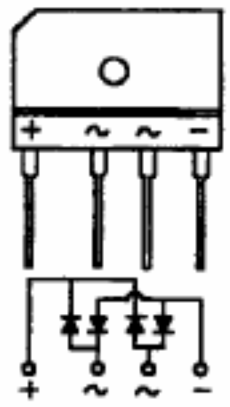
2SD1548-LB



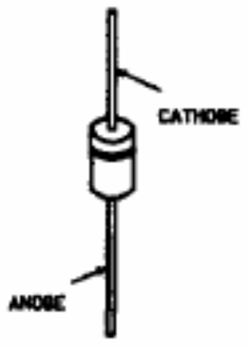
CTU-12S



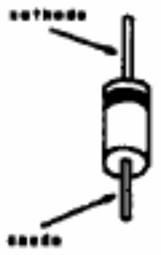
D4SB60L-F



EGP20G
ERC06-15S
RGP02-17
RU-3AM

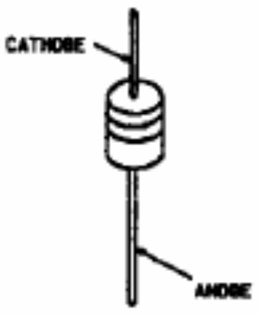


ERD-29-08J

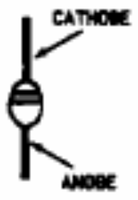


HZS10NB3
HZS11NB3
HZS12NB3
HZS3.9NB2TD
HZS33NB1
HZS36NB4
HZS4.7NB2
HZS6.8NB3
HZS7.5NB3
HZS9.1NB3
MTZJ-15A
MTZJ-33A
MTZJ-3.9B
MTZJ-36B
MTZN-10C

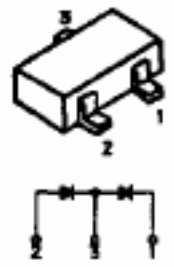
RD11ESB3
RD12ESB2
RD15ESB1
RD5.6ESB2
RD6.2ESB2
RD6.2ESL3
RD6.8ESB2
RD7.5ESB2
RD9.1ESB3
UZ-4.7BSC
1SS119



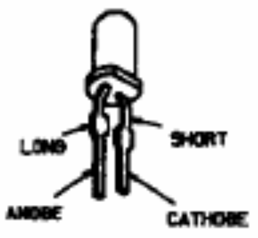
U05G



1SS226

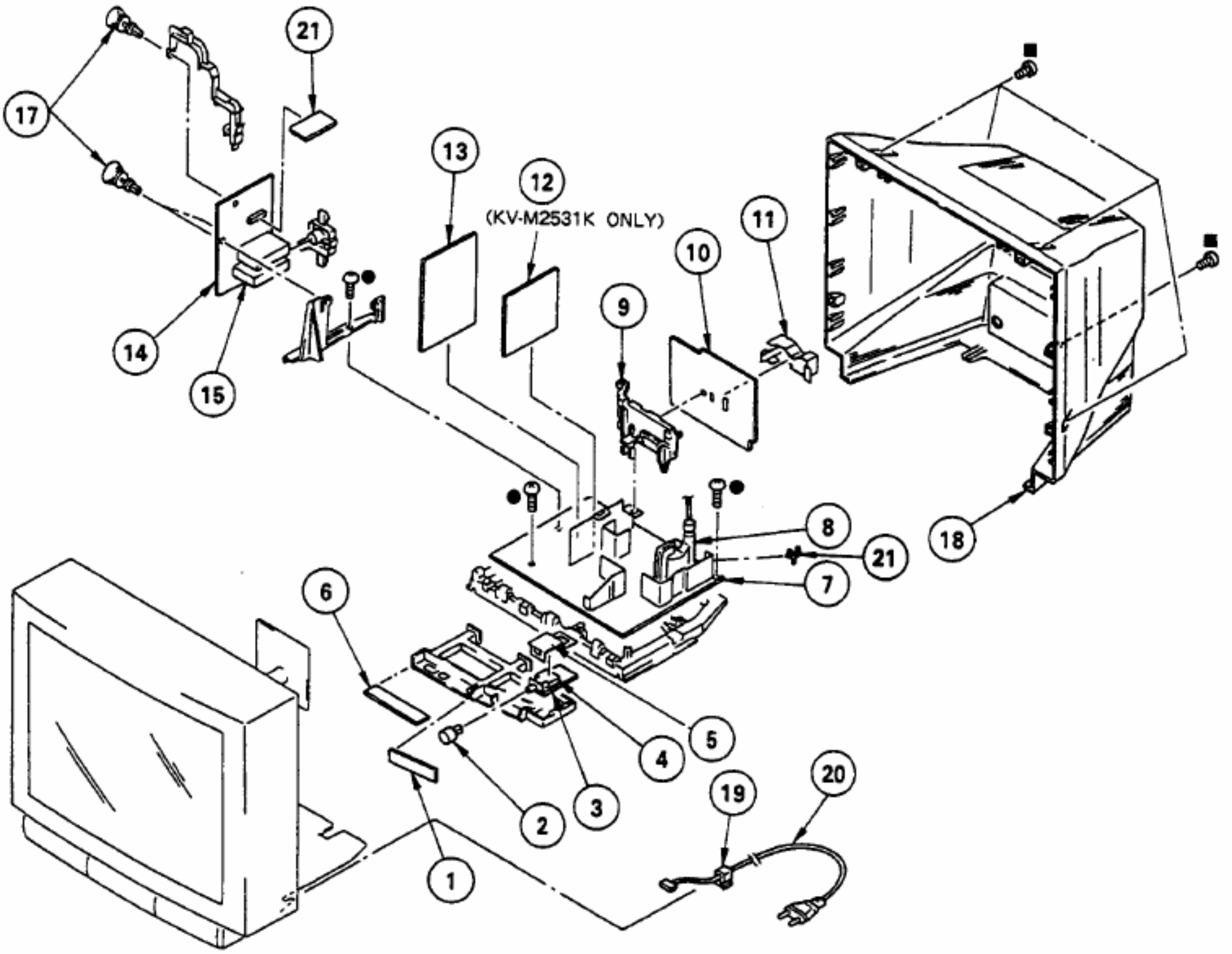


LD-201VR



6-1. CHASSIS

●	BVTP3 × 12	7-685-648-79
■	BVTP4 × 16	7-685-663-79



6-2. PICTURE TUBE